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ORIGINAL LECTURES.

CHOPART'S AMPUTATION.

An Extract from "The Address in Surgery" before The Medical Society of the State of Pennsylvania, June 29, 1887.

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THIS operation is made at what is called the medio-tarsal joint, between the scaphoid and cuboid bones in front and the astragalus and os calcis behind. The joint is situated about midway between the tarso-metatarsal articulation in front and the ankle-joint behind. These two being the points at which Hey's and Syme's amputations are respectively performed, the field for the performance of a Chopart is exceedingly limited, and the opportunities must necessarily be very few for its performance as compared with either of the others.

It is, however, an admirable operation in cases to which it is suited, and should be selected in those cases in which the disease or injury extends too far back to permit of the performance of a Hey's amputation, and still there is sufficient tissue left upon the sole of the foot out of which a plantar flap can be secured to cover the face of the astragalus and os calcis.

"Although an effort," says Hancock, in his lectures on the anatomy and surgery of the human foot, "has been made by Velpeau and others to fix the date for the first performance of Chopart's operation in the year 1746, and to give the credit to Hecquet, of Abbeville, for doing the operation, I have no doubt that the honor of originality has been justly awarded to Chopart. Boyer, a great admirer and supporter of Chopart, who speaks with the authority of personal knowledge, not only fixes the date as the 21st of August, 1791, but adds that "Chopart was so modest and disapproved so much of the practice, so prevalent nowadays, of proclaiming one's name in the journals, that it was only at his (Boyer's) express solicitation that he consented to his case appearing in Fourcroy's journal," which it did in 1792. In this case Chopart made two incisions, one on each side of the foot, extending forward from the astragalo-scaphoid and calcaneo-cuboid articulations. A transverse incision on the dorsum of the foot joined these two at their anterior extremities. The flap reflected back, Chopart cut through the extensor tendons and the dorsal ligaments. He next luxated the bones by depressing the front of the foot; and carrying his knife behind and below the bones, he cut from behind forward through the soft parts of the sole an inferior flap a little longer than the upper one. Secondary hemorrhage took place upon two occasions, but in spite of this the patient recovered and left the hospital on the 9th of November, or eleven weeks after the operation, able to walk upon the foot as well as on the other."

Probably few operations in the whole domain of surgery have had so many objections urged against them as the one now under consideration. Some of the objections are trivial, but one of great force is that the anterior tendinous attachments being necessarily cut off the gastrocnemius and soleus muscles draw the heel upward, in consequence of which the cicatrix becomes exposed to pressure in walking, and hence is liable to undergo ulceration. All surgeons of much experience have seen cases of this kind. It has been my fortune to witness two cases in which amputation at the ankle-joint was performed to remedy this difficulty.

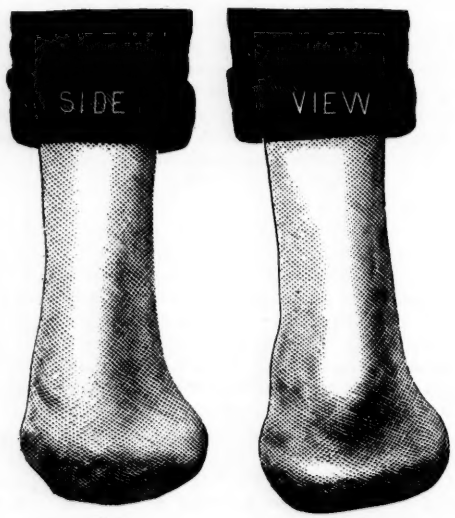
Many good surgeons have expressed themselves as opposed to this operation. On the other hand equally good, if not better, authority can be quoted in favor of its performance. Mr. Syme was in the habit of performing it in preference to his own operation in all cases to which it was applicable. He never designed his own operation as a substitute for that of Chopart. Some time after he had devised the operation at the ankle-joint he said, "The operation of Chopart, which leaves only the astragalus and os calcis, is the most valuable of all the partial amputations, as it commands the largest portion of the foot requiring removal for disease or injury, and at the same time preserves a support for the patient not less useful than that which is afforded by the whole of the tarsus. Its introduction was long opposed on the ground that the extensor muscles of the ankle acting through the tendo-Achillis, when no longer antagonized, would draw up the heel and point the cicatrix to the ground. I performed this operation in 1829, and have frequently done so since with the most satisfactory result, no inconvenience having ever been experienced from the source just mentioned, as the cut extremities of the tendons on the forepart of the joint speedily acquired new attachments, enabling them to counteract the extensive power."

It is no wonder, therefore, that we see the greatest diversity of practice in this regard. In our great iron-mills and at our railroad centres so many feet are crushed under heavy weights, that amputation of the foot at some point is one of the most frequent operations the surgeon is called upon to perform, and it is of the utmost importance that all questions pertaining to the subject should be definitely settled. In this connection the following case is of interest:

CASE.—Robert G., mulatto, twenty-two years old, was admitted to the Western Pennsylvania Hospital, January 31, 1884. Patient had been found lying near the track of the Lake Erie Railroad twenty miles from the city. While in a state of intoxication he became sleepy and had lain down beside the track. The night was intensely cold, and it is presumed that he was out all night. When he was brought to the hospital it was found that the anterior portions of both feet were frozen.

A line of demarcation soon formed upon both feet. On February 6th (one week from admission) the question of amputation was considered. Quite a number of surgeons were present besides the resident physicians of the hospital, and while there was a unanimity of opinion as to the propriety of amputation, there was a difference as to the point at which the amputation should be made. The lines of demarcation were oblique; they were the same upon both feet, the tissues being destroyed to a greater extent upon the dorsal than upon the plantar surfaces. Syme's and Chopart's operations were fully considered. Those who advocated the doing of Syme's amputation asserted that the result in Chopart's operation was always doubtful, and that especially in a case like this, where both feet were implicated, it should not be attempted. After a full consideration of the subject it seemed to me that this was a case especially favorable for Chopart's operation. Good flaps could be secured from the soles of the feet, and I felt confident, from the experience which I had had in previous cases, that I would be able to prevent the pulling up of the heel.

Chopart's amputation was accordingly performed upon both of the feet; there being no skin on the dorsal surface of either foot out of which to form flaps, the medio-tarsal joint was opened in both cases directly from above, and a sufficient flap obtained from the plantar surface of each foot to cover the bones. The arteries were twisted, the wounds held together with silver wire sutures and adhesive plaster and a dressing of dry oakum applied. To prevent the drawing up of the heels, a subcutaneous tenotomy was performed upon both tendones-Achillis and a sole-leather splint accurately moulded to the back and sides of each leg, extending down upon the heels. In this manner the ankle-joints were kept well flexed. The dressings were not disturbed until the fourth day after the operation, when the wounds were found to have united through



Right. Left.

their whole extent, with the exception of about half an inch on the right foot. During the time the patient remained in bed the heels were kept well extended by the sole-leather splints. He was able to get upon crutches at the end of four weeks, and was discharged from the hospital April 2d, sixty-three days from the date of admission. I did not see this patient until June 1, 1887, three and one-half years from the date of the amputations. The result did not disappoint me. After his dismissal from the hospital the patient informed me he continued to wear the splints which had been moulded to his legs at the time of the operation for three or four months, when he discarded them, and has since worn nothing but a pair of ordinary leather gaiters laced in front. He keeps the front of his shoes stuffed with cotton or some other soft material. He is engaged as a cook in a boarding-house; he is able to walk to his home, a distance of four long city blocks; he frequently walks down town to the post-office and back, a distance of two miles, with no other assistance than an ordinary cane. He is able to flex and extend both ankle-joints with perfect ease and to their full extent. He asserts that his feet give him no pain, and that he would much prefer to have them as they are than to have them off at the ankles. In this opinion all who have seen him walk must agree, unless, indeed, it would be the artificial limb manufacturer. I show you these plaster casts taken of his limbs a few days ago; also these woodcuts taken from photographs. The fact that the patient is a negro will explain the prominence of the heels.

This case is of interest from the fact that the operation of Chopart is an exceedingly rare one as compared with the other amputations of the foot, and it is of importance for the purpose of settling conflicting opinions in relation to it. It is also an important case from the fact that it is the only case, so far as I have been able to learn, where the operation has been done upon *both of the feet.* The fact that this patient is able to walk with no other assistance than an ordinary cane, and has been doing so for more than three years, speaks volumes in favor of the operation. It shows the value of the stump as a support for the weight of the body and as a means of locomotion more clearly than could be shown by many cases where the operation was done upon only one foot. This is a very severe test of the operation. When one foot only is lost a patient is able to help it by throwing most, if not all, of his weight upon the other foot, but when both are gone, each foot must bear the brunt, and do its share of the labor. For this reason it is rare to see a man who has lost both of his limbs walking without the aid of a crutch (artificial limb manufacturers to the contrary notwithstanding), and when one is found who does so, he usually uses two canes, and, in order to keep his balance, extends his arms to their full extent, and walks in a shuffling, ambling manner, much different from the manner in which my patient walks.

I could state other cases of Chopart's amputation which have come under my observation, where the result was much better than it is possible for any of Syme's amputation to be.

I know a gentleman in Pittsburg whom I meet daily on the street; he is an active young man of twenty-two years of age. Nine years ago his right foot was traversed by a car wheel, crushing the foot up to the instep. For this injury his foot was at once amputated by the method of Chopart. Few who meet him on the streets suspect that there is anything the matter with his foot. There is a spring and elasticity to his tread which

I have never seen in any one who has suffered a Syme's amputation, and which I believe it impossible to obtain by any artificial contrivance in a case where the ankle-joint is lost. This man is a salesman in one of our largest and most busy retail stores; he is on his feet all day actively engaged in waiting upon customers; he walks to and from his home in the suburbs of Allegheny, a distance of two miles, from his store; he is a good dancer, and few of his companions can equal him as a pedestrian. It is proper to state that this man wears an artificial appliance upon his foot.

From my experience in these and other cases I feel justified in recommending Chopart's amputation in all cases to which it is applicable. It is not pretended that it can take the place of a Syme's amputation. Where there is not a sufficiency of healthy tissue to obtain a good flap from the sole of the foot, the operation should never be attempted. The flap upon which the patient is expected to walk should never be made from the tissues upon the dorsum of the foot. The skin over the instep cannot be made to bear the pressure of the weight of the body without ulcerating and causing pain. The dorsal flap should, therefore, always be short. Another reason for making a short dorsal flap, or no dorsal flap at all, is, that by so doing the tendon of the tibialicus anticus muscle and the tendons of the other flexor muscles of the foot are cut short, and for this reason when they become attached in the cicatrix are the more likely to keep the foot flexed, and thereby counteract the extending force of the gastrocnemius and soleus muscles. When, however, a sufficient amount of good flap can be obtained from the sole of the foot, no surgeon should do a Syme's in preference to a Chopart's amputation.

Many of our best surgeons are in favor of the operation. They do it in all suitable cases. It is fair to conclude that those who fail should charge their failure to the fact that they have done the operation in cases to which it was not applicable, or to a want of proper management in the after-treatment of the case. It is in the art of surgery as in other arts, those who fail in methods where others succeed should charge the failure not to the method, but to themselves. In cases where there is a sufficiency of plantar flap and the ankle-joint is kept well flexed during the after-treatment of the case, there will be no failure. To accomplish this it is prudent to divide the tendo-Achillis subcutaneously at the time of the operation.

Mr. Delagarde, of Exeter, England, advises that in sewing up the flap after the operation the tendon of the tibialicus anticus muscle should be transfixed by one of the sutures. He relates three consecutive cases in which he resorted to this procedure which were entirely successful. He asserts that as the wound healed the tendon became firmly attached to the cicatrix. This seems to me to be an excellent suggestion, and is one which I shall in future adopt.

With regard to the mortality after Chopart's amputation, the statistics would indicate that they are about the same as after Syme's amputation, viz., seven per cent. But Chopart's is an operation so seldom resorted to, and the statistics have been so imperfectly recorded, that they are of little value. I think it is fair to infer, on general principles, that the part removed in a Chopart's amputation being not more than half of that removed by a Syme's, that the danger to life cannot be as great.

In conclusion, let me say that the principle for which I have contended is the same as that which has governed surgeons for hundreds of years in their amputations upon the arm. It is the same principle which Mr. Syme established fifty years ago for the leg, viz., *that amputations should be made as far from the trunk as possible.* This principle is as good for the foot as it is for the arm or leg, and, therefore, we say that the surgeon who performs a Syme's amputation when he might do a Chopart's, or a Chopart's where a Hey's would answer, increases the risks and unnecessarily mutilates his patient.

ORIGINAL ARTICLES.

STRICTURE OF THE URETHRA IN WOMEN.[1]

BY ELY VAN DE WARKER, M.D.,
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IN view of the great frequency of diseases of the urinary organs in women, and in consequence the very thorough study that has been given them, it is extraordinary that so little attention has been directed to stricture of the urethra. All the great systematic writers, who are unquestionably thorough in all else, are silent, or treat worse than silently, a matter that I have reason to believe to be of great importance.

As instances of this, notice the following: Thomas, in his fifth edition, does not mention the subject. Emmet says that it is rare, except as the result of violence. Among older English writers, Churchill, who had such a wide experience, and could relate it so graphically, says, "My own experience does not qualify me to speak as to the frequency of organic stricture of the female; it cannot be very common, or I should have met with it. But I have met with two cases which I suppose to be spasmodic stricture;" and which cases he relates, and which were evidently cases of hysterical retention. West does not mention it, neither does McClintock; Sir C. M. Clarke gives it no place. Graily Hewitt says it is very rare compared to the other sex, and dismisses the subject in eight lines. Barnes ignores the matter, and Tait finds it unworthy of mention. The later French authors do not give it any consideration, so far as I have examined. The elaborate and painstaking German authors give it equally scant treatment. Beigel makes no mention of the subject; and Winckel, in a special treatise on the "Urinary Organs of Women," in the *Handbuch der Frauenkrankheiten*, gives it but a very scant space. Hart and Barbour do not mention the subject, except as atresia due to fistula. Skene, in his work on the *Diseases of the Bladder and Urethra in Women*, says that it occurs often enough to demand attention, and claims for it certain consideration due to its peculiarities in women. Mainly, its causes are the same in both sexes: the deposit of inflammatory products beneath the mucous membrane, which by gradual contraction constrict the canal. There

[1] Read before the Medical Association of Central New York.

is nothing here that differs in either sex, but he says it "may be produced by bands of scar tissue formed in the anterior vaginal wall and stretching across the urethra." Vesico-vaginal fistula may also cause it, and which we may call the stricture of habit. In the next sentence he makes what I believe to be an error. "The form of stricture that will most frequently come under your observation," he says," "will be a contraction of the meatus urinarius, produced in many cases by the too liberal use of caustics in the treatment of abnormal growths at the lower end of the urethra, or from vulvitis." Now if there is any point at which stricture in the sexes differ, it is the extreme frequency with which we find contraction of the meatus in the male and its rarity at this point in the female. Abnormal growths of the orifice of the urinary passage in women are exceedingly common, and when present, with very rare exceptions, they cause dilatation of the opening, which will not be more than compensated for by the action of caustics; but I believe that caustics are as rare in the treatment of these growths at the meatus as is stricture at this point in women. I have never seen a vulvitis treated by caustics to such an extent as to cause a slough, and without that, stricture would not result.

The subject upon which the greatest importance should be placed is given very doubtful treatment by Dr. Skene. Concerning the diagnosis, the directions are to explore the passage with the sound, using one so large that it will not pass the stricture, and thus locate it, and then by using a sound that will pass through it the extent of the obstruction can be known. If a writer upon male stricture were to direct such a method of exploring the passage, there would be very few strictures of large calibre, as Otis calls them, that we would ever know much about.

I have given extra space to Dr. Skene's very excellent treatise, because it is the only one of importance in our language, and if such an author treats a subject lightly, or in a way to prolong the period of error, we may dismiss any further consideration of those who are regarded as authority. Among the special journals the subject has been given more attention than in the text-books, and it is not an unusual thing to find the report of cases of stricture of the female urethra, and particularly has this been true for the last few months, with the result of a gradual awakening to the fact that an important pathological condition has been nearly overlooked.

The systematic gynecological writers are all wrong in their estimate of the importance and frequency of stricture of the female urethra. As the result of my own individual experience, I believe that it is as frequent as a like condition in the male, and the consequences to one sex are as serious as to the other. If this be true, it is an important matter, and each individual experience ought to be made available to correct the omission.

Now there was a time within the memory of many among us when it may have been said that in an exact and scientific way we knew very little about stricture of the male urethra; and yet, concerning this, important and careful instruction had been given for generations. There came, however, with the use of instruments of precision, a period of more exact examination, which not only gave us more perfect but a far wider range of knowledge. By these means could we study the pathological condition of the urethra within the living subject, but an abnormal state was all but discovered, and its morbid outcome given its due value, for, previous to this, strictures of large calibre were, if known, given no practical importance. Up to this period the general surgeon gave about the same instruction concerning the diagnosis of stricture of the male urethra that Dr. Skene has given in the same condition of the female passage. It cannot be disputed that, so far as stricture in women is known and treated, it stands to day where the surgery of the male urethra did half a generation ago. I date the knowledge of stricture in the male, of large and small calibre, their number, location, and extent, their consistency and dilatability, together with the calibre of the passage yet in a normal condition, to the invention and general use of the exploratory bulbs and urethrometer.

If we trust in urethral exploration in women to the sound, we simply learn that we have to deal with a narrowed passage, and we overlook strictures of large calibre entirely; whereas, if we explore with the bulbs, we learn all that the sound can reveal, but also the extent, number, and location of the constricted points, their firmness and dilatability, and the differential diameter of each.

Dr. Skene, in common with the very few writers who have given any description of urethral stricture in women, appears to derive his standard of comparison from stricture in the other sex. To a certain extent no comparison is possible. Except as the result of traumatism, the impervious urethra, or exceedingly narrow stricture, is not met with in women, but this form is quite common in men. Further, a narrowing in men that will cause but slight diminution in the current of urine, never retention, and but rarely dysuria, will result in all these symptoms in women. I believe this to be the true distinction to make between the sexes in the pathology and symptoms of stricture. Of course, women are exposed to all the etiological conditions that men are, plus a few others, incidental to their sex, but these in no way contribute to what may be regarded as sexual differences in results. From whatever cause, retention, incontinence, and dysuria are symptoms much more frequently met with in women than in men, and in consequence slighter pathological changes will cause more active disturbance in the former. If strictures of large calibre have the pathological importance in men that such an accurate observer as Dr. F. N. Otis assigns to them—and there can be no doubt of the truth of his observations—strictures of like character have still more serious import in women.

It is not necessary to reason any further from analogy. I am able to appeal to facts to establish the truth of my position. A long established method of treating dysuria in women has been by forcible dilatation of the urethra, an operation usually made with the finger of the operator. I had so treated

these cases of painful urination many times; sometimes with success, at other times with failure; but it appeared difficult to explain the contradiction in result. I have now learned that when I succeeded in relieving my patient I had to deal with a stricture of large calibre—in other words, I had treated a stricture by what, in the surgery of the male urethra, we would call divulsion. Since I began habitually to explore the female urethra with the bulbs in all cases of bladder disturbance, I have never made the operation of forcible dilatation, except in those cases in which a large sized bulb, say Nos. 24 to 27 F., has demonstrated the presence of constricting bands, with the result of making the operation much less frequently but with more uniform success. In forcing the finger into the urethra I have frequently felt the narrow constricting bands, but without really understanding their nature until I had studied the condition of the passage with the Otis bulbs. It is impossible to detect strictures of this size by the sound, as resistance is at every point alike; and from the size of the sound that you are able to pass, it does not appear that any stricture is possible. Free as was the opening of the urinary passage, the widely dilatable constricting bands were sufficient to keep up a constant fret of the mucous membrane. This, I believe, constitutes a sexual trait in the different reaction of stricture of this character in the sexes; that which will cause frequent and painful urination in women, and greatly dispose to spasmodic retention, simply, as a rule, causes an intractable urethral catarrh in men.

It is remarkable how sensitive the bulbs are in detecting and locating strictures of wide lumen. Sometimes the constrictions are arranged in series, and a No. 24 to 27 bulb will slip along in a series of jerks that offer but the slightest resistance to the hand; but more usually one or two of these bands are found located at the middle or upper portion of the urethra. The lumen of the normal female urethra is not the same throughout its length. It is contracted toward the meatus, expanded in the middle portion, and narrows again as it approaches the bladder. The use of the urethrometer proves this. One must not, therefore, allow error to occur from the introduction of too large a bulb, and which would move with more freedom at one portion of the urethra than another. The sensation of meeting and passing one of these bands is so characteristic and unmistakable that there is but little danger of error.

I am not prepared to give an opinion on the etiological relations of these large strictures. They differ in one important particular from obstructions of the same diameter in the male. In women they occupy but a small space longitudinally of the passage, while in men a half to one inch is sometimes involved. All the symptoms evoked by strictures of more contracted diameters are observed in those I have been describing.

In those cases in which the lumen of the passage is greatly reduced, I know of no way to differentiate them by the degree of functional disturbance from the first variety. I have made it a part of the routine examination of a patient to explore the urethra by the Otis bulbs, and as much a matter of course as examination by bimanual palpation or examination by the rectum. This I have practised for about three years, with the result of inducing me to reject the usual teachings of the systematic authors, and to believe that stricture of the female urethra is a frequent condition. Symptoms of functional disturbance due to stricture have their periods of exacerbation and intermission, so that the patient will give a history of difficult or painful micturition with intervals of relief.

In strictures of small dimensions, if the obstruction is sufficient to diminish the stream, this symptom, of course, persists, but even here it is subject to varying degrees of intensity, amounting occasionally to retention, while it is possible to introduce a fair sized catheter. I have observed the same symptom in the male, and in which the retention could be relieved by a No. 20 F. catheter. In women it is not safe to regard every case of urine retention as hysterical until, after a urethral examination by the bulbs, the passage is shown to be free from strictures, large or small.

The most contracted urethra I have met with offered firm obstruction to a No. 16 F. bulb. It was situated about half an inch from the meatus. She had complained of urinary difficulties for about eight years, and been treated for urethritis and cystitis and disease of the kidneys by a great variety of physicians. She was forty-seven years old, and about ten years before had had gonorrhœa, and to which I attributed the stricture.

I never saw but one case of contraction at the meatus. The subject was sixty-two years old, the mother of several children, and had suffered quite a number of years from difficult and painful micturition. A No. 19 bulb could be passed with difficulty through the meatus; another stricture slightly larger was found half an inch further up the passage. I divided the meatus, as dilatation at this point was exquisitely painful, even after using cocaine. The division was made upward—just the reverse of the direction in which it is made in the male. From the thickened and inverted prepuce, the hypertrophied right nympha, with its hardened and corrugated surface, and the general pigmentation of both nymphæ, I suspected long continued masturbation, although the social position of the patient forbade any questioning upon the subject.

I do not propose to take up your time with illustrative cases, and have alluded to these only as possible proof that like causes operate in both sexes. Senile stricture and stricture at the vesical neck are met with, and are extremely unsatisfactory to treat.

As I have consumed my allotted time, I can only briefly notice the treatment. Of course, the bulbs are not used for the purpose of dilatation. I make use of graduated steel sounds, the same that I used when in general surgical practice to treat male stricture. The action is twofold—to dilate and to cause gradual absorption of the constricting exudate. In strictures of large size, forcible dilatation or divulsion may be used: but I doubt the utility of this method in rigid strictures of small dimensions, as I

believe it would be found necessary to supplement the operation by the use of the sound to prevent contraction. The treatment, made two or three times a week, extends over a considerable length of time—from two to three months; but the relief given to the patient early by the use of the sounds is very satisfactory. As dilatation of the urethra is no more important than the absorption caused by their use, the latter implies a more or less prolonged treatment.

I believe any one can verify my position upon this subject by the habitual examination of the urethra with the exploratory bulbs in every case of pelvic disease that presents itself for treatment. The usual practice is not to explore the urethra, except when urinary symptoms are present, and then either by the sound or by some form of urethral speculum. My own experience is that one may learn more by the thorough way in which you can *feel* the conditions of the urethra by a properly selected bulb than by seeing. Speculum or endoscopic examination of the female urethra is a very unsatisfactory method compared to the touch. Here, as in other pelvic diseases of women, the gynecologist ought to make his diagnosis by the touch. As women are extremely sensitive in the urethra, cocaine should be used both in examination and treatment. In the examination the solution ought to be employed of full strength —5 per cent.—as the passage of the bulb is much more painful than that of the sound.

BASE-BALL PITCHER'S ARM.

POINTS IN ITS ANATOMY, PHYSIOLOGY, PATHOLOGY, SYMPTOMATOLOGY, AND TREATMENT, TOGETHER WITH SUGGESTIONS AS TO ITS PROPHYLAXIS.

BY A. H. P. LEUF, M.D.,
OF PHILADELPHIA.

WHILE we have regularly made the acquaintance of the "tennis arm," "bicyclist's prostate," and other allied conditions, only a small proportion of the profession know anything about the disability of base-ball pitchers. As a rule, only those of us who take an interest in the great national game have heard from time to time of the total disability from overwork of some of the best pitchers.

The importance of a knowledge of this class of ailments can readily be appreciated from a monetary standpoint when it is remembered that good pitchers have salaries ranging from two thousand to four thousand dollars for a season's work of six or seven months, with but from one to three working days in the week.

For the benefit of those who know little or nothing of the game, and what is required of the pitcher, it would be well to make a few explanations. The average time occupied in a single good game of ball is from one and a half to two hours. During this time the pitcher takes his stand nine times in what is technically known as "the box," to "pitch" the ball toward the batsman. It is fair to say that he averages about twenty "pitches" each time he is in the box. This would make about one hundred and eighty pitches in each game. Sometimes the number is much greater and sometimes much less. The ball is delivered with all possible speed, so that the batsman has as little time to deliberate and gauge the ball as possible; the ball has been pitched from the box to the plate, a distance of fifty feet, in seven-eighths of a second. This work alone would be very trying, as it is extremely violent, the ball being thrown with all the strength of the player's whole body. Moreover, the ball is deflected from the usually vertical curve in any direction before it reaches the batsman.

It is the business of the pitcher to deliver the ball with the greatest possible, or a modified, speed, as his judgment directs, and coupled with this he so handles the ball before allowing it to leave him, that it is caused to deviate to the right ("in-curve") or left ("out-curve"), as the case may be, after it has taken its course in a certain direction. Not only does he do this, but he may also cause the sphere to make a sudden and unexpected ascent ("up-curve") or descent ("down-curve"). Any combination of these curves is possible, as up and out, down and out, up and in, and down and in.

I shall now attempt to explain more in detail the method of producing these curves, so that the etiology of "pitcher's arm" may be understood.

In the act of delivering the "in-curve" or "in-shoot"—so called because it turns suddenly toward the pitcher's right, in toward the batsman—the arm is swung forward at full length, the body also taking part thoroughly in the effort; every muscle is strained to give the ball speed. Just before it leaves the hand, the forearm and hand are sharply drawn across the chest, and the hand flexed quickly on the wrist with a sudden jerk or snap, and the ball allowed to roll off the tips of the index and median fingers. This imparts to the ball a rotary motion forward and from left to right.

In the position for pitching the "out-curve" the arm is also swung at full length, either above or below the shoulder. Then, with a short, quick motion, the hand is quickly flexed and adducted, and the elbow drawn backward and outward, while the ball is allowed to roll off the radial side of the index finger. This imparts to it a rotary motion forward, and from right to left.

In the delivery of the down curve, or drop ball, so known because while in the act of yielding to gravitation in the ordinary manner, it suddenly takes a sharp turn down, and falls to the ground several feet shorter than it would have done without the special twist imparted to it for this purpose. The arm is swung back with full force, and brought up over the head, or on a level with the ear, with the forearm a little flexed. The greatest force is now exerted in bringing the hand and arm quickly downward and forward, when, just before the ball leaves the pitcher, the wrist is snapped into semi-adduction and extension—*i. e.*, directly downward. The ball rolls off the upper or radial side of the index finger, and has imparted to it a rotation forward and downward.

In the production of the up-curve, or rising ball, so designated because it turns upward with the convexity of the curve downward, the arm is drawn

far back, the body is bent, and the arm then forcibly and quickly brought forward, with the hand near the knee. At this time the forearm is suddenly and forcibly supinated, and the wrist semi-adducted and extended, and the ball permitted to roll off the lowermost edge of the hand—*i. e.*, from the radial side of the index finger. This imparts to the ball a forward and upward rotation.

As has already been said, a combination of any of these curves is possible. For example, a ball delivered from the tips of the upturned fingers, with the rising-ball delivery, sends the ball upward, and causes it to descend before it reaches the batsman, and is known as the "snake ball," or rising drop.

The curving of the ball, or its lateral deviation from the proper line, is all due to the rotary motion imparted to it by the sudden, jerky, snapping motions of the forearm and hand, and pressure of the fingers. The curving is explained on the principle of the gyroscope. The peculiar and apparently awkward motion in pitching, is necessary to impart to the ball the proper gyration or twist, while the body movements are added to increase the speed of the ball in its passage from the pitcher to the batsman. Every pitcher has a somewhat different mode of delivery, and upon this depends the exact location of the disabling trouble under which he may be laboring.

PHYSIOLOGY.—The *in-curve* calls into action most particularly the pectoralis major, the biceps, brachialis anticus, and flexors of the forearm. The *out-curve* affects the pectoralis major, coraco-brachialis, infraspinatus, teres minor, and ulnar muscles. The *down-curve* strains most especially the pectoralis major, trapezuis, deltoid, and serratus magnus. The *up-curve* is mostly caused by the pectoralis major, biceps, and supinator brevis.

All kinds of pitching strain the elbow-joint. There is a tendency each time to a separation of the bones at the outer side of the joint—*i.e.*, radius and capitellum of the humerus. This is prevented, however, by the biceps, supinator longus, and extensor carpi radialis longior. The constant necessity for quick and forcible flexion of the elbow greatly strains the brachialis anticus; this is, therefore, one of the first among the muscles to feel the strain.

PATHOLOGY.—The changes induced by the exercise of pitching may affect muscles, ligaments, or bones. Secondarily, other structures may be involved, either by direct extension or by reflex action. Muscular changes manifest themselves in the usual stiffness or soreness the day after the exercise has been taken, or as much as two days later, without any special discomfort at the time of play or the day following. This muscular tenderness is due to hypernutrition caused by the excessive exercise. Adjustment follows in a few days, and everything assumes its normal course, for the circulation through the muscular tissue is then reduced to its usual requirement. On the other hand, daily exercise of the same character soon brings the muscle up to the requirement suggested by the increased supply of blood, and soreness soon disappears. What is true of muscles in this regard is also true of ligaments and bones. I feel quite certain that much of the soreness in either of these structures is due to accumulated excrementitious products, the result of sudden, transient, and excessive functional activity.

Muscles.—The brachialis anticus is probably most often the first to become painful and tender. The tenderness extends along the front and inner side of the lower third of the arm. The biceps participates in the tenderness soon after the preceding muscle, but it is usually only the lower half that is subject to pain. Examination of the arms of those in exercise or training will show that the lower end of the biceps belly becomes hard before the upper portion, and may be as firm almost as a piece of wood or bone, while the upper half is still capable of digital impression. The deltoid is also very commonly affected, and especially its posterior half, and more particularly in its upper portion. The pain may become so great that it is impossible to raise the elbow to the height of the shoulder, and the tenderness so marked that it is a decided relief to be divested of a coat, and a suspender is a positive load. The trapezius is often the seat of pain, but only, as a rule, along its upper or cervical border and a little below, just above those fibres which are attached to the scapular spine. The rhomboids and serratus magnus frequently become painful, the latter being strained in the delivery both of the out-curve and rising ball. The up-curve also greatly strains the latissimus dorsi; so, likewise, the drop-ball, for in both these deliveries the humerus is forcibly brought down toward the chest from an extended position. General soreness of the forearm muscles, both extensors and flexors, may be noticed, but this is mostly seen at the commencement of a season's work or in beginners. Sometimes there is moderate soreness of the triceps.

Ligaments.—The coraco-humeral is the one most affected in the shoulder-joint. Sometimes there is considerable pain in what has seemed to me, after careful study, to be the coraco-clavicular ligaments. Of all the shoulder ligaments, the acromio-clavicular are decidedly the most troublesome. This is readily understood when we take into consideration that in all the sudden and forcible movements incident to pitching, the acromio-clavicular joint is under an enormous and constantly recurring strain. The bones to which the ligaments of this articulation are attached are very porous, and thus apt to undergo changes from this strain. The external and internal lateral ligaments of the elbow are frequently the cause of lameness. They are subject to a great direct strain in all kinds of curve pitching. When congested or inflamed, they occasion the most excruciating pain, either at rest or during exercise. The wrist ligaments also become somewhat affected at times, but not to any very great extent. Occasionally much deep-seated pain is caused by a strained or congested condition of the radio-ulnar ligament

Bones.—That the bones are affected in the arms of pitchers, especially if the disability is of long standing, no longer admits of any doubt in my mind. The trouble is usually local and limited to the tendinous attachments of particular muscles and of ligaments and their immediate vicinity. Among these I would mention as most prominent the acro-

mio-clavicular joint, the outer border of the acromion process and outer end of the scapular spine, the tuberosities of the humerus, the middle of the outer side of the humerus, the two condyles, the bicipital tuberosity of the radius and the coronoid process of the ulna.

SYMPTOMS.—Myalgia, ranging in degree from a simple soreness accompanied by stiffness to a high grade of tenderness, may be present along the anterior and inner aspects of the arm; it may exist in the fleshy cap of the shoulder; it is often found along the cervico-acromial arch, especially in its centre, and thence extends a few inches backward and downward across the fibres of the trapezius. Scapular and peri-scapular myalgia is frequent, especially in the rhomboid region.

Severer pain is felt in the involvement of the ligaments and tendons. These are readily discovered as thickened and tender by comparison with their fellows of the opposite arm. Pressure, even when light, causes marked pain, and tension causes intense suffering. This is readily produced, for instance in the elbow, by efforts at lateral motion at the joint, by which means the lateral ligaments are alternately put upon the stretch and relaxed. Fixation of the clavicle, while up and down, or to and fro motion is being made at the acromion, readily determines whether or not there is any affection of the acromio-clavicular ligaments. Passive motion of any of the joints having congested or inflamed ligaments or cartilage causes deep-seated and racking pain. The attempt to pitch with certain deliveries, for instance, as that which I have described for the rising ball, occasion a sudden, sharp, shooting, and intense pain to dart directly across and through the elbow-joint as would an electric shock. It passes from the inner to the outer side as a rule, though sometimes it is so rapid, practically instantaneous, that its direction cannot be determined. The pain, I believe, to be due to compression of tender structures, either ligamentous, cartilaginous, or osseous, or all, at the inner side of the joint, and tension of similar and surrounding parts upon the outer side.

The most severe, continuous, as well as sickening pains are due to the involvement of portions of the bones. I am well aware that I am treading upon new ground and subjecting the results of my investigation to sceptical criticism by the assertion that the bones are frequently involved in the affections of pitchers' arms. Nevertheless, I do say so most positively. The observation of a single case of long-enough standing and of sufficient severity will convince anyone that the trouble is largely osseous. It can be determined by comparison with the opposite limb, by the characteristic symptoms of osteitis and osseous congestions, and by the complete hardness of the bony enlargement.

These osteitic affections take place wherever the muscles that are most used have their attachments, and especially when the bone at the point of attachment is soft and porous. For this reason most trouble is encountered at the extremities of the bones. The rationale of bony involvement is simple when we consider the mode of insertion of muscles by their tendons to bone and also the attachment of the ligaments. The constant excessive pulling of the tendinous expansion upon the connective tissue framework of the bone calls for more work, more nutriment, more blood, and the result is hyperæmia, congestion, inflammation, proliferation, calcareous deposits—in short, a true osteitis resulting in a local hypertrophy of bone. Again, the periosteum is pulled upon and strained; its vessels, for a like reason as those of the bones, become gorged with more blood; periostitis eventually ensues, and with it more or less hypertrophy of the subjacent bone.

TREATMENT.—This may be prophylactic or curative.

Prophylaxis should consist in regular exercise or practice, regardless of the work done in a game. The practice should be of a remitting character. By this I mean that a pitcher, during practice, should work at his ease, and occasionally put on a spurt in speed and make an effort to do his best. Then he should lapse back again into easy work. These changes could be made a number of times during a single continuous practice of about one hour. Their frequency and duration must depend upon the condition of the pitcher at the time. When he has what is called an "off day," a day when he lacks natural interest in his work, it is well to do nothing but easy pitching. At no time should the exercise be violent, that is, straining, at the beginning. The reason for this is that in the complex and rapid movements of this exercise, together with the shallowness of the glenoid cavity, and the comparatively large size of the head of the humerus, it is easy either to dislocate the shoulder-joint or give it a bad wrench. Such an accident may disable one for a whole season if it does not do so permanently. Beginning the exercise with ease, and gradually increasing it, enables the muscles to accustom themselves to associate or coördinate work. The truth of this is borne out by the fact that most of the wrenches and dislocations that happen to ball players, occur in the early part of the season and in the early part of the game.

Pitchers, to be in "good form," should practise for about one hour every morning and afternoon, Sundays included. The exercise should be restricted to fifteen or twenty minutes for that half of any day in which regular work is to be done in a game.

All exercise should invariably take place in the sun, unless this is impossible because of cloudiness, or when work has to be done in-doors on account of rain. When the temperature in the shade falls below 60° F., it becomes risky to pitch with vigor. The risk increases in proportion as the temperature falls below this point. It is necessary, after severe out-door practice at a lower temperature than 60° F., to keep the body very warm, either by vigorous general exercise, such as walking; or, better still, by keeping in a warm room for one or two hours. This is all important at the beginning of the season with one who has been out of practice during the winter. An important fact to bear in mind, though seldom, if ever appreciated, is, that it is of vastly more importance to maintain a high temperature equably about the whole body, than taking good(?) care of the pitching arm and letting the rest of the

body take care of itself. This latter plan is the one usually followed, but is radically wrong.

Liniments should never be used on a pitcher's arm; or, in fact, on any part of the body of an athlete in case of pain from over-exertion. In the first place, they are utterly useless, as any number of impartial and disgusted sufferers can testify. Instead of mitigating the deep-seated pains, they add to them that of an irritant, especially if the liniment is "strong," and the result is a combination of superficial and deep pains. In the second place, if they contain aconite and if this constituent is absorbed, it benumbs the terminal nerve filaments and so lowers the maximum of muscular contractility as well as the rapidity of its responsiveness to the will and coördination reflexes. Morphia or opium and other anodynes are not unlikely to produce exactly similar results. That liniments sometimes have a good effect in these cases I do not deny, but the effect is mainly that of a much required placebo, and in such instances it is best to use a very mild, non-anodyne liniment, with plenty of hot flannel.

Rubbing, massage, and passive motion should invariably be discouraged. These manipulations are excellent substitutes for voluntary exercise in patients who are helpless or comparatively so, but they serve no beneficial purpose to a limb that has just ceased undergoing the severest kind of physical strain for one or two hours. Such a part requires temporary rest, and will do best without systematic exercise, though passive, till the next regular period for practice.

Regular exercise twice daily in the manner already indicated, should form the main treatment of a diseased pitching arm. Every other plan of treatment, to be permanently beneficial, must be subservient to this one idea. The object of continuous exercise is to encourage and bring to a climax and final completion those congestive and inflammatory processes in the muscles, ligaments, cartilage, and bones that lead to hypertrophy and necessary increase in strength. Some individuals are already so well endowed with these structures that additional growth is not required; others have small bones and weak muscles and ligaments with tender, or at least soft, articular cartilages. All such must be encouraged and nursed in their growth till it is completed. If this is intelligently managed, I predict that the owner of such an arm will never suffer damage in his arm from overwork, but may through accident or gross carelessness.

It is important to keep these nutritive or inflammatory changes within safe limits. When pain, tenderness, or swelling becomes excessive, it is well to make the exercise less violent and of shorter duration. Much of the pain experienced immediately after a game or practice may be abolished by position. As a rule, if the arm is held directly upward, preferably by another person without any effort on the part of the patient, there will speedily ensue a sense of comparative comfort. This I suppose to be due to the gravitation of some of the excess of blood contained in the arm back to the trunk, in this way relieving tension and pressure. A few gentle strokes from the hand along the arm down to the base of the shoulder facilitate the return of blood and hasten relief. Immersion of the whole upper extremity and shoulder into water at as high a temperature as can be tolerated, produces a most gratifying sensation of relief. This I suppose to be due to 1st, a general sedative effect and relaxation of the tissues; 2d, a dilatation of the superficial vessels causing an appreciable and beneficial depletion of those in the deeper and congested or inflamed structures; 3d, a quickening of the circulation, and consequently more rapid elimination of morbific material accumulated in the tissues during the excessive labor. If a rubber sleeve including the whole limb and fitting tightly about the base of the shoulder is applied with the arm held up over the head by an assistant, and the water turned into the sleeve, the result will be the combined effects of hot water and gravitation. This may be kept up for from five to thirty minutes, depending upon the severity of the pain, and upon the effects trials have shown it to have on that particular patient. The drying of the patient's arm must be done gently. There must be no vigorous rubbing or squeezing. He should not at all refrain from using it for ordinary purposes even if it be somewhat painful.

In severer cases, where there is an excess of inflammatory products, the best remedy is mild galvanism. The strength of current and length of time it is employed are determined by experience with the patient under treatment, and his own sensations. This seems to be the best rule. I have employed large flat electrodes, one in front and the other behind the elbow-joint. At the shoulder I would put one on top and the other at various painful points. As a rule, I apply both poles to sensitive parts. Occasionally it is well to break the current, though not often, and sometimes I reverse it. Mild galvanism is very gratifying and should be done in the evening, so that the nutritive changes induced by the passage of the current shall act undisturbed till the next morning.

It is of great importance that the kidneys, bowels, and skin should act very freely. It has been my experience that it makes little difference as to what or how much a pitcher eats so long as he follows a normal appetite, is without idiosyncrasies as regards diet, and leads a regular life free from excesses, provided the skin, kidneys and bowels act freely.

A languor often experienced after a game, and which prevents an appetite and interferes with digestion, is very often counteracted by a glass of cold milk. Beer has the same effect, but it is best never to order it, because it is often soon abused and the physician, as well as the patient, receives, and too often merits, blame.

In those cases where the pain is so severe that it becomes agonizing, and not only prevents sleep but elicits groans from the sufferer, it is necessary and beneficial to give a hypodermatic of morphia. It should be large enough to induce freedom from pain and permit sleep. The pain must have sunk to a minimum without the aid of an anodyne before pitching practice is resumed, and then it must be easy and very gradually increased. Sharp pains are always warnings that it is well to heed. Any kind of exertion

that will often cause a sharp pain has to be carefully studied; and a remedy will suggest itself that will result nine times out of ten in permitting the patient to pitch the same ball with either persevering and gradually increasing exercise of the same delivery, or some modification of it that experiment will show to be possible without pain.

My practical experience as an amateur ball player may help to convince that the points I have made are well founded. I developed a most excruciatingly painful right upper extremity from pitching. Every muscle, bone, and ligament, from the vertebral spines behind and the sternum and linea alba in front, to the right wrist, were in turn affected either singly or in groups. The pain and stiffness extended on the trunk between the right superior curved line of the occipital bone to the right iliac crest. Muscular soreness, fatigue, anorexia, fever, stiffness, and a loss of sleep from pain were for many weeks the rule. One night, after a hardly contested game, I was compelled to call up a friend from an adjoining room and have him administer ♏xv of Magendie's solution hypodermatically. The strongest liniments, both as regards counter-irritant and anodyne properties, were hopelessly ineffectual in making even the slightest beneficial impression.

My connection with a well-known athletic club and acquaintance with intelligent and college bred professional ball-players enabled me to see what could be done in the way I have already suggested for either prevention or cure. By adhering to my own plan of treatment, less the regular use of electricity, I was enabled to get entirely well and develop "staying qualities" at play that professional players have declared exceptional. This is mentioned simply to show what can be done by judicious management.

240 SOUTH EIGHTH STREET.

PISTOL-SHOT WOUND OF ABDOMEN TREATED BY LAPAROTOMY AND SUTURING THE INTESTINES.[1]

BY R. A. KINLOCH, M.D.,
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JOSEPH B., colored, aged twenty-seven, was admitted into the City Hospital, January 21st, at 7.30 P.M. He had, two hours before, been shot in the abdomen with a pistol-ball (38-calibre), by a policeman, with whom he was struggling at the time. The ball had entered an inch and a half to the left of the umbilicus. There was also a slight wound of the scalp, supposed to have been received by falling after being shot. There was but little shock; patient seemed comfortable, with the exception of pain on the inside of the left thigh, which was intensified by movement of the limb. Pulse was 88, respiration 24, temperature 99°. He was given by the house-surgeon forty drops of tincture of opium, put to bed, abdomen carefully washed with a solution of bichloride of mercury (1 : 2000), iodoform sprinkled upon the wound, a compress of cotton placed over this, and retained by an abdominal bandage.

I visited the patient an hour after his admission into the hospital, and immediately directed the preparations for laparotomy. At 10 P.M., the preparations being complete, half a grain of morphia was given hypodermatically, and soon after anæsthesia was induced by the A.-C.-E. mixture. The little finger was first passed into the wound, and subsequently a Nélaton porcelain-ball probe, to verify the fact of the entrance of the projectile into the peritoneal cavity. The cavity was then opened into by an incision eight inches in length, upon the median line, extending from the umbilicus to just above the pubes. The incision was made under a weak carbolic spray. The intestines were carefully drawn out and examined piece by piece. Soft, clean towels, wrung out of a warm solution of bichloride of mercury (1 : 10,000), were used for covering the intestines as the examination proceeded. The jejunum was found to have four perforations—two were orifices of entrance and two of exit. The ileum had two perforations—one of entrance and one of exit. The mesentery was perforated in two places, and was besides badly torn. One of the vessels of the mesentery was bleeding freely. The hemorrhage was at once controlled by pressure-forceps, and subsequently by a fine silk antiseptic ligature. There was a considerable amount of blood, fluid and clotted, in the cavity. All the wounds were closed, without paring, by means of a delicate, round, smooth, straight needle carrying fine antiseptic silk, forming the Lembert suture. The large wound in the mesentery was as carefully brought together as possible, but it was noticed that at this point there was an extensive infiltration of blood which could not be removed. The cavity was carefully cleansed, and washed out with the weak solution of bichloride of mercury.

Much difficulty was experienced in returning the intestines into the cavity, because of the rigidity of the abdominal parietes. The abdominal wound was closed by deep silver wire sutures, and superficial sutures of fine antiseptic silk. A large rubber drainage tube was inserted, and the wound dressed with iodoform, cotton, and a sublimate bandage. During the operation, which was necessarily protracted, three hypodermatic injections of sulphuric ether and tincture of digitalis were administered. The patient was in very good condition when removed from the operating-table to his bed. Now another hypodermatic of half a grain of morphia was given. Cracked ice in small quantities was allowed.

January 22, 6.30 A.M. Pulse 108, respiration 36, temperature 101°. Allowed a spoonful of milk and lime water occasionally, if not nauseated. Morphia, if required to relieve pain and insure quiet. Incontinence of urine was noticed. At 5 P.M., pulse 118, respiration 25, temperature 100°.

23d. At 12 midnight, pulse 108, respiration 32, temperature 100°. 3 A.M., pulse 118, respiration 32, temperature 102.9°. 6 A.M., pulse 104, respiration 28, temperature 101.4°. At 8.30 A.M. vomiting occurred. I visited the patient soon after this,

[1] Read before the American Surgical Association, May 12, 1887.

and upon examining the drainage tube and wound, found that one of the wire sutures had broken, and a small knuckle of intestine was protruding through the middle of the wound. There had been some bloody serum discharged through the tube. I disinfected the wound, carefully returned the intestine, and closed the gap in the wound by a stout antiseptic silk suture. The patient made no special complaint of pain. Drainage tube was removed. Small quantities of peptonized milk allowed, if the stomach should be quiet. Morphia, if necessary.

At 2.30 P. M. Pulse 120, resp. 20, temp. 102°.

At 5 P.M. Pulse 108, resp. 25, temp. 102°.

At 9 P.M. slight vomiting again occurred. Nothing but ice had been taken. Vomiting occurred at intervals during the next two hours, then ceased for one hour, and again recurred. At 12.15 A. M. the patient suddenly died.

Post mortem (sixteen hours after death). Abdomen alone examined. This was greatly distended. Two more of the wire sutures had parted, as the consequence of the post-mortem gaseous distention of abdomen. No adhesion of the parietal peritoneum at wound; about half a pint of dark serosanguinolent fluid in cavity; patches of lymphy exudation upon serous surface of intestines and parietal peritoneum; intestines generally hyperæmic; all of the intestinal wounds that had been sutured were closed, and at some points the convolutions of the gut were slightly adherent to the parietal peritoneum; all of the sutures were buried by the exudation, showing that good repair had begun; no fecal extravasation; a portion of the rent in the mesentery was gaping; a circumscribed abscess was discovered in the meso-colon, to the right of the vertebral column, and out of the line of direction of the bullet—this, said my medical friend who conducted the autopsy, "looked like the breaking down of a caseous lymphatic gland." The bullet was found in the soft parts behind the body of the fourth lumbar vertebra, on the left side, it having in its passage cut away a portion of the body of the vertebra; kidneys congested and ecchymotic.

REMARKS.—The present attitude of laparotomy for traumatism is such that it should be regarded as imperative with the profession to report every case occurring in practice. The very limited number of cases of operation for bullet wounds of the abdomen, without protrusion of the viscera, that have been reported, are not sufficient to furnish valuable statistical evidence. Nor is the contrast between the results obtained by the active and the passive treatment in such cases yet sufficient to elicit a unanimous verdict from experienced clinicians.

The case whose clinical history I have just read, is the third in which I have practised free abdominal section for bullet wounds of the abdomen without visceral protrusion. The time between my first and third operation is about twenty-three years. This long interval between these operations is explicable simply from the fact that cases where such practice could be instituted have rarely occurred to me. Upon two occasions, since my first operation, I have seen patients recover without interference. In one of these, the lapse of time before the case was seen rendered interference unadvisable; in the other, operation was rejected by the sufferer and his friends.

The limited number of laparotomies for wounds of this kind, done in the civilized world during the past twenty-three years, my operation of 1863 being regarded as the first, would lead to the inference that the procedure has not during this time been accepted by a large number of the surgeons of the world. This may be regarded either as an evidence of conservatism, or as a rejection of bold and venturesome effort because of its apparent inhumanity.

Upon the publication, in 1882, of my second case, a fatal one, I used these words: "While this adds another fatal case to the short list of those in which similar treatment has been instituted, it does not alter my belief in the correctness of the practice in the class of injuries presenting so gloomy a prognosis."

Again, I said: "While not as hopeful as my distinguished friend Dr. Sims, because of the success of ovariotomy, I do look forward to better results than have been so far obtained." "Listerism, and much of the knowledge acquired by the ovariotomists," I suggested, "would soon embolden surgeons, who had heretofore favored the passive policy, and give us fuller statistics upon which to reach conclusions." This opinion has begun to be verified, but the progress, if I can call it such, has been slower than a sanguine surgeon could have expected. Dr. Thomas S. K. Morton, in a valuable paper (THE MEDICAL NEWS, Feb. 19, 1887) entitled "Abdominal Section for Traumatism," read before the Philadelphia County Medical Society, on January 26, 1887 (and which paper anticipated much that I had purposed saying upon this occasion), gives, as he says, the result afforded by canvassing the literature of the world, and furnishing an abstract of every case which he had been able to find. The total number of cases of abdominal section for traumatism, as given, is only 57. But 22 of these were cases of gunshot wounds. Of the 57 cases, 36 died, and 21 recovered, a mortality of 63 per cent. Of the 22 gunshot cases, 5 recovered and 17 died, a mortality of 77 per cent.

The gunshot cases alone concern us at present, but I trust I may be excused for alluding to one matter which personally interests me.

"The first case of abdominal section for traumatism," says Dr. Morton, "was that of Dr. Walters, of Pittsburg, for ruptured bladder, in 1862. The first successful case was the same. The first after Walters was that of Heath, in 1876. The first recovery after Walters case was that of Dr. W. O. Roberts, done for stab-wound, August 28, 1882.

"By the term abdominal section for traumatism, is meant to include those cases where the operator deliberately opens the belly or greatly enlarges an existant wound for the purpose of discovering intraperitoneal wounds, and, if they are present, repairing them as far as possible, together with more or less final cleansing of the peritoneal cavity."

My first operation was performed May 27, 1863. This was for traumatism most certainly; and, to say nothing of its being for gunshot injury, it should stand next to Walters's case, and before Heath's of

1876. My case recovered; so, in this regard too, the case precedes Roberts's of 1882. It most assuredly comes within Dr. Morton's definition of traumatism.

In this operation for gunshot wound, I deliberately opened the belly, repaired intraperitoneal wounds, and cleansed the peritoneal cavity. Again, Dr. Morton alludes to my case of 1881 as "the first recorded one of gunshot wound treated by abdominal section." "The first recovery of gunshot case," he says, "was the case of Kocher, of Switzerland, in 1883." And afterward he says: "The first recovery was a case operated on by Dr. William T. Bull, of New York, in 1884." Dr. Morton intended, no doubt, to say that Dr. Bull's case was the first recovery in this country. In this he is correct, if my first operation of 1863 is to be excluded from the category of laparotomies for gunshot wound of the abdomen, and my case of 1881 recognized as the first case on record. This question I will leave for others to decide, it concerns me only so far as it pertains to the history of the operation. It is true that the operation of 1863 was practised seven months after reception of the wound. Nutrition of my patient was failing rapidly; there had been but one discharge per rectum, and that only the contents of the lower bowel, since the reception of the wound, and inevitable death was in the near future. Now it was that *laparotomy for gunshot wound, without protrusion of viscera, was done for the first time.*

In my publication of the case I urged this practice as applicable to recent gunshot wounds of the abdomen without protrusion. I put forward the success obtained as an argument against the almost universal practice of abandoning intestinal lesions of this kind to nature, rather than to risk opening boldly the peritoneal cavity. I expressed the opinion that the result of the operation should serve to encourage that hopefulness and boldness so essential to progressive surgery, and at all times preferable to despair.

Since the publication of Dr. Morton's statistics there have been several additional reports of operations to be added to the list. The cases of Dr. Packard, of Philadelphia, and Dr. C. Kollock, of Cheraw, S. C., now occur to me. The latter was a successful operation, and one worthy of notice, because of the confidence exhibited by the surgeon in his art, and the recovery of the patient under most adverse surroundings. The operation was done in a negro cabin, without professional assistance, and without the opportunity of carrying out antiseptic precautions.

The signs of our times, I now may be permitted to say, are most hopeful. Surgeons are beginning to accept the argument of Baudens, long ago so boldly and happily expressed. No longer, I trust, will the fear of being regarded inhuman, or too bold, "stay the hand that alone can preserve the days of a dying man." Humanity is not to be illustrated by inactivity or stoical indifference. The rule of conduct, as said Baudens, should rather be the well-known aphorism, "*nullius anceps remedium æquam nullam.*"

There are several points of special interest connected with the clinical history of this case, to which I will briefly advert. First. The absence of symptoms thought to be of diagnostic value in intestinal lesions from bullet wounds. There was no marked shock, no escape of fecal matter from the abdominal wound, no sudden meteorism. To have relied upon this negative evidence, and to have resorted to a passive treatment under the assumption that there was no intestinal lesion, would, it is true, have been of no detriment to this patient, as the result proved, yet I would have been led far away from a correct diagnosis.

Second. From the numerous intestinal perforations there was no escape of fecal matter into the peritoneal cavity. I have upon another occasion called attention to this fact as one not to be passed over in connection with our reasoning as to the propriety of an active or a passive treatment in gunshot wounds of the abdomen. (*Journal of Amer. Med. Association*, Dec. 18, 1886.) It is certainly an argument to be used against the active treatment. The prevailing idea is that general peritonitis arises from fecal extravasations, and that the indication for laparotomy is mainly founded upon the necessity of obviating or removing this supposed cause. To quote merely from two high American authorities: says Gross, in his *System of Surgery*, "the great danger is from fecal effusion, and such effusion is almost inevitable, even when the opening of the intestine is of a very small extent." Says Hamilton, in his *Treatise on Military Surgery and Hygiene*, "It is equally true that death, in a great majority of cases, is caused by extravasation of the contents of the bowels into the peritoneal cavity, and the consequent inflammation." It is, indeed, difficult to explain the absence of fecal extravasation in the more fearful intestinal lesions, however easy it may be to understand this in cases of very slight wounds. I desire only to offer my clinical experience in corroboration of what has been observed by others. The spasmodic rigidity and hardness of portions of intestines injured have been noted by Baudens, and suggested as a diagnostic sign to be recollected when the finger is to be passed through the parietal wound into the peritoneal cavity. I particularly observed, in my investigation, that the intestinal perforations were measurably closed by the crowding of the mucous and muscular coats of the bowel into the wounds of the peritoneal layer, these tissues seeming to act like a cork in preventing the escape of the fluid contents. Paralysis of the tube, the result of the severe shock and injury, may, by preventing peristaltic action, explain to some extent the absence of fecal exudation. Gross, in his *Experimental and Critical Inquiry into the Nature and Treatment of the Wounds of the Intestines*, tells us of the marked contraction and eversion of incised wounds of the intestines, by which the extent of the wound becomes much reduced. The experiments of Mr. Travers to prove that fecal extravasation was not a necessary consequence of punctured and incised wounds of the intestines are familiar to all. Mr. Erichsen, among the most prominent of modern surgeons, has affirmed that "it is seldom that feces are extravasated from a gut that is not protruding, unless it be very full at the time of injury, or the wound in it be very large."

He cites two cases of shot wounds of the intestine, coming within his own observation, to bear him out in this assertion. There are also others who have entertained similar views. In the *Surgical History of the War of the Rebellion*, Dr. Otis notices these recorded observations, and, in his enthusiasm for *his* side of the argument, pronounces them "dangerous fallacies." The truth most probably is, that the cases in which there is no fecal extravasation constitute exceptions to the general rule. In any investigations of scientific truth it is well for one to present fairly the arguments which seem to militate against his own view of the case, and it is with this idea that I have called attention to the above facts.

Third. I have in both of my fatal cases, been impressed with the little suffering experienced by the wounded, and their almost painless death. This is contrary to general observation and belief in cases of acute general peritonitis. As a rule, death comes quickly. With "hyper acute peritonitis," says Baudens, "life is prolonged scarcely more than twenty-four hours." But, in the language of John Bell, death is not easy: "there soon come on dreadful pain and vomiting, costiveness, hiccough, the torments of the *miserere mei*, and the patient in great anguish expires." Where gangrene results there may be a "deceitful ease," a slower and less painful death. How is this absence of suffering to be explained? It is probable that the use of the drainage tube, admitting of the escape of the inflammatory effusion, and thus relieving belly tension, may have something to do with it.

The treatment of acute peritonitis by abdominal section has been proposed and practised. Should relief from pain follow upon such practice, it may be explicable upon the same principle. This may be advanced as another argument for laparotomy in intestinal wounds, for next to the cure of disease we look to the satisfaction coming of a painless death—the humanity of a bold practice.

Fourth. The fatal termination of a case like the one I have reported should not be used as an argument against the treatment by laparotomy. Abdominal wounds, the precise nature and extent of which can scarcely be revealed before operation, must often prove as fatal as are cases of brain and heart injuries which are at once fully recognized. Prognosis must at times not be announced until suggested by diagnosis. This case is one in point. The injury to the mesentery, apart from the numerous intestinal perforations, was, perhaps, sufficient to insure a fatal result, by its consequent peritonitis and sepsis. The surroundings of the case were unfavorable to operation, as all will admit who know anything of a negro hospital in a southern latitude. The rupture of one of the wire sutures, and the consequent hernial protrusion, was most unfortunate. I cannot pretend to say how far this may have influenced the destructive processes which eventuated in death. At the time of operation I objected to the character of the wire handed me for use, fearing that it had not the necessary strength. It happened to be all that was in the hospital at the time, and had to be accepted. The tension of the abdominal walls in the powerfully muscular subject delayed the operative procedure, and was a formidable obstacle to the return of the intestines into the cavity, and the keeping of them there. To some extent this tension was increased, as inflammatory results appeared, and thus the strain upon the sutures was more than they could bear.

The formation of a circumscribed abscess in the meso-colon in so short a period of time, I allude to, in conclusion, as a striking feature in the pathology of the case.

CASES OF CHEESE POISONING.

BY SHIPPEN WALLACE,
CHEMIST TO THE NEW JERSEY STATE BOARD OF HEALTH AND TO THE STATE DAIRY COMMISSIONER.

ON January 20th last, over fifty persons were suddenly taken ill at Jeanesville, Pa. The symptoms were the same in all the cases, and on investigation by the physician, he was led to the belief that the cause arose from cheese which had been purchased at the village store.

Portions of the suspected cheese, obtained from the families of those who were ill, were sent to me for analysis. I was, from the symptoms, led to suspect tyrotoxicon as the cause, which proved to be correct on analysis, the chemical reactions not only being obtained, but also the physiological test: a cat having been made quite sick after partaking of milk to which a small quantity of the isolated tyrotoxicon had been added.

During the past month a similar outbreak of sickness, but not affecting so many persons, took place at Riverton, N. J., and on the analysis of the cheese which the attending physician suspected to be the cause, I also found tyrotoxicon to be present. In both instances no deaths occurred, the patients recovering with proper treatment.

There can be no doubt that the cheese was the cause in both instances. In the Riverton case, in one family of seven, all partook of the same food with the exception of one, who ate the same that the others did, but did not partake of the cheese. All but this one were taken sick within a few hours; and while in the Jeanesville case there were a few who were not made ill, yet all who were had eaten of the cheese to a greater or less extent. Dr. E. B. Doolittle, of Jeanesville, had charge of the cases there, and gives the following account of the symptoms: "There were at least fifty persons poisoned by this cheese. There were also eight others who ate of the cheese, but felt no unpleasant effects; whether this was due to personal idiosyncrasy or to an uneven distribution of the poison throughout the cheese, I am unable to say.

"The majority, however, comprising fifty or sixty persons, were seized in from two to four hours after eating the cheese with vertigo, nausea, vomiting, and severe rigors, though varying in their order of appearance and in severity in different cases. The vomiting and chills were the most constant and severe symptoms in all the cases, and were soon followed by severe pain in the epigastric region, cramps in the feet and lower limbs, purging and griping pain in the bowels, a sensation of numbness or pins and needles, especially in the limbs, and, lastly, very

marked prostration, amounting almost to collapse, in a few cases.

"The vomit at first consisted of the contents of the stomach, and had a strong odor of cheese, afterward it consisted of mucus, bile, and in three or four of the severest cases blood was mixed with the mucus in small quantities. Microscopic examination of the same was not made, but to the eye it appeared as such. The vomiting and diarrhœa lasted from two to twelve hours. The rigors and muscular cramps, one to two hours. The diarrhœa, at first fecal, became later watery and light-colored. No deaths occurred, and for the most part the effects were transient, and all that remained on the following day were the prostration and numbness; the latter occurred in about one-half of the cases, and disappeared in from one to three days.

"Children, as a rule, seemed to suffer less than adults, and, of course, it was not possible to elicit as definite symptoms from them. The suddenness of the attack was remarked by all; some feeling perfectly well until the moment of attack. Nor did the symptoms seem to be in proportion to the amount of cheese taken. Some of the severest cases declared they had not eaten more than a cubic inch of it. One of the severest cases was about six and a half months pregnant, but no interference with pregnancy occurred. All the cheese which caused the sickness came from the same piece."

This outbreak is the largest of the kind of which we have a record since the one in Michigan a few years since, which resulted in Prof. Vaughan discovering the cause, and giving the toxic substance its name, tyrotoxicon—cheese poison.

Last summer, at Long Branch, forty-three persons were taken ill, caused by this same agent in milk (THE MEDICAL NEWS, September 25, 1886), and lately at Memphis there was a similar outbreak.

To Dr. Vaughan is due the credit of the discovery of tyrotoxicon, and while we find in the *Lancet* of January 29, 1887, an article on a poisonous ptomaine in milk, to which the writer proposes the name "lactotoxine," and expresses his ignorance of any literature bearing on the subject, yet on reading the article one is struck with the great similarity and arrangement of symptoms, and method of analysis there found, to the article written by Dr. Vaughan, and if the writer was as ignorant as he states, it certainly affords a very striking coincident.

Of what tyrotoxicon is, *chemically*, we are at present ignorant, but there can be little doubt that we shall soon know, as Dr. Vaughan is engaged in its study, and has already published an extremely interesting "preliminary note" (THE MEDICAL NEWS, April 2, 1887).

Its cause and origin are, undoubtedly, to be found in a fermentation of the milk, caused by improper treatment after milking (THE MEDICAL NEWS, September 25, 1885), and that it is already in the milk from which the cheese is made, and is not formed in the cheese, but only perhaps increased in quantity, is not only possible but probable. If such is the case, greater attention on the part of manufacturers to the care of the milk, would result in obviating its presence.

In opposition to the above theory, however, is the fact that all "cheeses of a batch" do not contain it, but unfortunately we cannot trace back the history of a cheese to the time when it was milk, with the certainty that we can and have traced milk which has caused illness. In the Jeanesville case the cheese causing the illness was one of a lot of thirty which were received at the same time from the factory; twenty-seven had been sold, and no illness resulted; but it was, of course, impossible to learn the history of the cheeses back to the time when the cows were milked.

HOSPITAL NOTES.

TREATMENT OF CHOLERA INFANTUM IN THE PHILADELPHIA HOSPITALS.

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

DR. LOUIS STARR, in the treatment of entero-colitis in the clinic for children, gives great prominence to the hygienic management. The following points are insisted upon:

a. Fresh air must be secured by taking the child to a public square in the cool of the morning and evening, or, better still, by a morning or evening trip on one of the river steamboats. The heat of the day must be spent in as cool a room as can be had. Coddling is discouraged, as many a stout mother has hastened her infant's death by too fond and constant nursing in the arms.

b. The clothing must be as thin as possible, provided, always, that woollen be worn next the skin.

c. Twice, or three times a day in very hot weather, the whole surface of the body must be sponged with water at a temperature of 80° F., and dried with gentle rubbing. The addition of rock salt renders these baths more bracing. Full warm baths must supplant the cold spongings if there be much prostration.

d. Diet most carefully regulated as to quality, quantity, and intervals of administration. Sound cow's milk must form the basis of the food in bottle-fed babies. Fairchild's peptogenic powder is very useful in artificial feeding.

Medicinal treatment varies with the case. Should the patient be seen early in the attack, it is initiated by a laxative. A teaspoonful of castor oil with five drops of paregoric, or the same quantity of spiced syrup of rhubarb, is sufficient for an infant of one year. Afterward, while the stools are yellow, homogeneous, and not very frequent, alkalies and astringents are employed, as:

℞.—Sodii bicarb. . . . . gr. xxxvj.
Syrupi rhei aromat. . . f℥ss.
Misturæ cretæ . q. s. ad f℥iij.—M.
S.—One teaspoonful every two hours, for a child of one year.[1]

When the stools are frequent, green, and acid in reaction, small doses of opium are added to the alkali; for example:

℞.—Tr. opii deod. . . . ♏vj.
Bismuthi subcarb. . . . gr. lxxij.
Syrupi . . . . . f℥ss.
Misturæ cretæ . q. s. ad f℥iij.—M.
S.—One teaspoonful every two hours.

[1] All prescriptions given are calculated for this age.

At the same time, the skin of the whole abdomen is reddened, two or three times a day, with a weak mustard draught—one part of mustard to five of flour.

If the evacuations be liquid and contain whitish or greenish flakes, and the above treatment fail after a fair trial, good results often follow a short mercurial course; thus:

℞.—Pulv. ipecac. comp. . . gr. ij.
Hydrarg. chlorid. mit. . . gr. ½.
Cretæ præparat. . . . gr. xxxvj.
M. et ft. chart No. xij.
S.—One powder every two hours for twenty-four or forty-eight hours, or until the stools become yellow and homogeneous.

Should the stools be frequent and serous, more powerful astringents are used, as aromatic sulphuric acid, nitrate of silver, or oxide of zinc.

When the stomach is very irritable, rectal injections are resorted to, the drugs used being tincture of opium, nitrate of silver, and ipecacuanha. Ipecacuanha is chosen when there is much tenesmus with the discharge of blood and mucus. It may be administered as follows:

℞.—Ext. ipecac. fld. . . . ♏xij.
Tr. opii deod. . . . ♏viij.
Mucilag. acaciæ . q. s. ad f℥ij.—M.
S.—Inject one tablespoonful every four hours.

Stimulants—wine of pepsin, brandy, or whiskey—are given when there is prostration.

In cases of recovery, the diet and hygiene are carefully watched until all danger of a relapse has passed; the astringents, etc., are gradually dropped, and digestants and tonics ordered.

The antiseptic treatment recommended by L. Emmett Holt has lately been tried with good results. It embraces the careful attention to regimen already alluded to, preliminary evacuation of the bowels with castor oil, and the administration of naphthalin. The latter is usually ordered as follows:

℞.—Naphthalin,
Ground coffee . . . . āā gr. vj.
Sugar of milk . . . . gr. xxiv.
M. et ft. chart No. xij.
S.—One powder every two hours.

In the whole conduct of our cases, the greatest care is taken to avoid locking the bowels.

PHILADELPHIA HOSPITAL.

DR. JOHN M. KEATING holds that the question of summer complaints may be considered under three heads, viz., simple indigestion, the inflammatory form, and the septic. These may be distinct, or they may be combined in the same case.

Too little stress has been laid upon the inherited feebleness of the digestive organs in many children. One is often surprised at the failure which meets the attempt to bring up a child on the bottle, notwithstanding every precaution be used. In these cases the digestive function is at fault—the infants are dyspeptic. Every child is a study in itself. Family idiosyncrasies have to be taken into consideration. "Bringing up by hand" is a science, and cannot be left to the nurse, however faithful and accomplished she may be.

At this time of the year, the simpler forms of diarrhœa are due to indigestion. The child is enfeebled by the intense heat, the teething process irritates its nervous system or affects its mucous membranes; the stools become frequent and watery, become greenish or at times are colorless, and then there are flatulence and pain. If the baby be in the city, these symptoms may come on suddenly and with great intensity; there may be, also, vomiting and fever, with evidence of cerebral excitation. The treatment of such a case should be as follows: Absolute rest; the child should be kept in as cool a place as possible. *Its bottle should be stopped at once*, and for a few hours its diet should be limited to cool gum-arabic water, with lime-water, wine whey, if there is much prostration, or a small amount at a time of Valentine's beef juice, with wine of pepsine. Toast water, or egg-albumen water, may be used to vary the diet if the attack persists for several days. Counter-irritation by hot foot-baths, flannels saturated with essence of ginger, or spice poultices to the abdomen, are very useful; and the gums should always be examined, and lanced if necessary, or the child should be given a soft handkerchief, soaked in ice-water, to suck or bite on. As for the medicinal treatment, we should use those preparations that allay gastric irritability.

℞.—Hydrarg. chl. mitis . . . gr. $\frac{1}{12}$.
Ext. pancreatis (Fairchild) . gr. j.
Sodæ bicarb. . . . . gr. j.—M.
One every hour.

This Dr. Keating has found to be of great service; or,

℞.—Bismuthi subnit. . . . gr. j.
Pepsini sacch. . . . . gr. ij.
Pulv. aromat. . . . . gr. j.—M.

But, and this is very important, if there be vomiting, and the passages contain curds, he would prefer to give

℞.—Hydrarg. chl. mitis . . . gr. $\frac{1}{12}$.
Pulv. ipecac. . . . . gr. $\frac{1}{24}$.
Sodæ bicarb. . . . . gr. j.—M.

One every half hour till six are given, and then the following every hour until the stools are free from curds and normal in color:

℞.—Ol. ricini . . . . . gtt. x.
Pulv. acac. . . . . gr. ij.
Syr. rhei aromat. . . . gtt. v.
Spts. vini gal. . . . . gtt. x.
Aquæ menth. pip. . q. s. ad f℥ij.—M.

Should there be much flatulence, mucus in the stools, straining, vomiting, and fever—in other words, the symptoms of entero-colitis—the castor-oil prescription is the one to be preferred, and he advises the salicylate of soda in half-grain doses to be incorporated with it.

When the stomach is very irritable, all feeding should be avoided by the mouth; and in such cases an enema of gum-arabic water with the yelk of an egg, about two ounces every three hours, immediately after a stool, may be given till the stomach is tolerant. When the bottle is resumed he advises boiled milk prepared with arrowroot or rice in small amounts.

He uses wine whey freely in cases where there is much prostration, made less laxative by mixing with toast water or gum-arabic water. The mucous membranes certainly are affected by the heat as well as the serous membranes, and on that account the temperature of these cases should be watched and controlled by refrigerant measures, or even quinine or antifebrin. Undoubtedly a large proportion of cases of summer diarrhœa are due to some septic influence, especially when they assume the choleraic form. The suddenness of onset, the evidence of vasomotor paralysis, the exhaustive discharge, call for immediate treatment of the most energetic character, The mild, unirritating diet which has just been outlined should be rigidly enforced; without it, medicinal treatment is of little avail. The child should be frequently sponged to keep the temperature down and the skin active. Sweet spirits of nitre should be used to keep the kidneys active and as a sedative; and if the pain seems severe and the movements are watery and frequent, the following may be given at intervals of one hour:

℞.—Hydrarg. chl. mitis . . . gr. $\frac{1}{12}$.
Pulv. Doveri . . . . gr. ½.
Sodæ bicarb. . . . . gr. j.—M.
Ft. chart. j.

Should there be vomiting and a profuse serous diarrhœa with pain, the following will probably answer better:

℞.—Morphiæ sulph. . . . gr. ¼.
Acid. sulphuric. aromat. . . gtt. xxxij.
Spts. vini gallici . . . ℥j.
Syr. acac. . . . . f℥ss.
Aq. menth. pip. . q. s. ad f℥ij.—M.
Dessertspoonful every two hours for a child a year old.

Or, if there is any reason to contraindicate the use of morphia, use the following:

℞.—Sodæ salicylat. . . . gr. viij.
Spts. chloroformi . . . gtt. xxxij.
Syr. zingib. . . . . ℥j.
Syr. acac. . . . . ℥ij.
Aq. menth. pip. . q. s. ad f℥j.—M.
Teaspoonful every hour. Shake well.

If in these cases the vomiting stilll persists, the following has served a good purpose:

℞.—Sodæ salicylat. . . . gr. j.
Bismuth. subnit. . . . gr. j.
Pulv. acaciæ . . . . gr. ij.

Repeated every hour; and sustain the child by very small quantities of wine whey—not more than a teaspoonful at a time.

When excellent and powerful astringents and opiates are required, use the following:

℞.—Tinct. kino comp.[1] . . . gtt. xl.
Syr. rhei aromat. . . . f℥j.
Spts. vini gallici . . . f℥j.
Syr. acaciæ . . q. s. ad f℥j.

Sig.—Teaspoonful in water after every movement; and this formula can be varied by adding bismuth salicylate, or chalk if necessary, or dilute or aromatic sulphuric acid.

In all cases of cholera infantum the antiseptic treatment is the most valuable, using creasote, carbolic acid, resorcin, calomel, corrosive sublimate, p. r. n.

Dr. Keating was one of the first to advocate the use of the salicylate of soda in this form of diarrhœa, using salicylic acid in half grain doses with the preparation known as soda mint. Its advantages are that it is cholagogue as well as antiseptic.

[1] This preparation, well known in Philadelphia, contains gum camphor and opium.

EPISCOPAL HOSPITAL.

DR. F. P. HENRY, in the treatment of summer diarrhœa, believes intestinal antisepsis to be an important indication. Convulsions, or other symptoms of profound intoxication, occurring at the outset of such an attack, may be reasonably attributed, in the absence of direct chemical proof, to the presence of tyrotoxicon or other poisonous ptomaines, in the ingested food. The same symptoms occurring at a later stage, are more probably due to the formation of such substances in the intestine, for it is established that they are produced in abnormal quantity in catarrhs of the gastro-intestinal tract. Whether introduced from without or formed within, an attempt should be made to prevent their disastrous effects upon the system. With this object in view, he has recently prescribed, with excellent results, the sodium salicylate, as recommended by Dr. Emmett Holt, of New York. He gives it with bismuth, as in the following formula:

℞.—Bismuth. subnitrat. . . . ℥j.
Sodii salicylat. . . . . ℥ss.
Syr. acaciæ . . . . ℥j.
Aquæ . . . q. s. ad ℥iij.—M.

For a child of from one to three years of age, a teaspoonful may be given every two or three hours. For older children, able to swallow a pill, thymol, which is undoubtedly one of the best known intestinal antiseptics, may be administered. It may be given in doses of one grain three or more times daily. It is very insoluble, and is best made into a pill with medicinal soap.

With reference to the still more important question of diet, it is sometimes necessary for a child to abstain for a time from its customary supply of milk, and live on mutton broth, clam juice, and barley water. In certain cases, milk appears to undergo changes which render it irritating to the bowels, and poisonous to the system. A substitute for milk may be found in some one of the numerous foods for infants, of which the soluble food of Carnrick is one of the best.

MEDICAL PROGRESS.

NAPHTHALOL.—KOBERT, of Dorpat, writes as follows regarding the use and constitution of this substance, in the *Thérapeutische Monatshefte* for May, 1887:

Salol was introduced by Nencki, of Berlin, who sought to substitute a less irritating compound for sodium salicylate. It was made by putting in the place of the salicylic radicle phenol or carbolic acid, to the extent of 38 per cent. When given in amounts of ℥1½ or ℥2 daily, unpleasant cerebral symptoms have followed, referable to the carbolic element in the compound.

Naphthalol is formed by substituting for the carbolic element, a less irritating substance known as beta-naphthol. Kobert has experimented with the following results, using this compound:

1. This substance is insoluble in water, odorless, tasteless, and is not dissolved or decomposed by the acid contents of the stomach, or by pepsine.

2. In contrast to the above, this substance is readily decomposed by the pancreatic ferments, and by the ferments produced by the mucous membrane of the living intestine. Salol, made with carbolic acid, is decomposed by pancreatic ferment only.

3. The mucous membrane of the large intestine in its upper portion, possesses the same power of decomposition as that of the small intestine; this property is diminished in the lower portion of the bowels.

4. Gastric disturbances and cerebral confusion were not produced by doses of four and a half to eight grains four times daily.

5. This substance appears in the urine in the same form in which salicylic acid appears—as a body turning ferric chloride a violet color.

6. Its continued use was well borne; animals bear forty or fifty grains for two days without injury.

7. In vesical catarrh, with alkaline and foul urine, its effects are most happy; the urine becoming clear and acid, and pain decreasing.

8. It is useful in acute joint rheumatism, and indicated in intestinal decompositions.

9. When added to culture materials it is not so powerful an antiseptic as phenol salol.

PALLIATIVE INCISION IN TUBERCULOUS PERITONITIS.—BREISKY has operated upon a case as follows:

The patient was a woman, in whose case a diagnosis of ovarian tumor had been made. On examination pulmonary tuberculosis was found; no tumor of the abdomen or affection of the uterus and appendages was present; the abdomen was filled with fluid. Aspiration gave twelve quarts of clear serous fluid, whose examination was negative. High fever continued, and the fluid accumulated again in eight days.

On incising the abdomen an extensive tuberculosis of the intestines was discovered, the genital organs being free. A small piece of peritoneum was excised for examination, and the wound dressed with iodoform gauze. Abdominal trouble ceased entirely after the operation; healing by first intention followed. The pulmonary tuberculosis was not influenced by the operation.—*Centralblatt für gesammte Therapie*, June, 1887.

TERPINE AND TERPINOL.—CHÉRON gives the following formulæ for terpine—hydrated turpentine—and terpinol—an oily, volatile derivative of terpine, made by boiling terpine with pure water, or water acidulated with hydrochloric or sulphuric acid.

Terpine	gr. 75.
Glycerine . .	
Alcohol (95 per cent.)	āā ℥ 2½.
Simple syrup .	

Terpine may be given to the extent of eight grains daily for chronic bronchitis, and in the same quantity for neuralgia.

Terpinol may be given in capsules or pills.

Terpinol,	
Benzoate of soda	āā gr. 1½.
Sugar	q. s.

for each pill or capsule. It may be dissolved in vaseline, fifty per cent., and given hypodermatically. It may also be used by Bergeon's method of rectal injections, the carbonic acid gas serving as a vehicle. It is indicated where turpentine has been given, especially in bronchitis.—*Revue Générale de Clinique et de Thérapeutique*, June 2, 1887.

EXTIRPATIONS OF THE LARYNX.—In the *Deutsche medicinische Wochenschrift* of June 2, p. 470, DR. EUGENE COHN reports some additional operations by DR. HAHN, and sums the results of the nine previous total extirpations by that surgeon, reported in Volkmann's *Klinische Vorträge*, Heft 260. The new cases are as follows:

I.—Shoemaker, aged sixty, from whose larynx several portions of carcinomatous tissue had been removed laryngoscopically, the tumor augmenting meanwhile, and becoming perceptible externally. The tumor involved both vocal bands and portions of the arytenoid and thyroid cartilages. Feb. 17 a low tracheotomy was done with some difficulty on account of the little space available, and ossification of the cartilages. An iodoformized compressed sponge canula was introduced; the incision was extended up to the hyoid bone, and the larynx was divided anteriorly to ascertain the dimensions of the growth, which extended as far down as the upper two rings of the trachea, and as high up as to involve the epiglottis. The hyoid bone was separated from the muscles of the lower jaw, and then hyoid bone, epiglottis, the entire larynx, and the two tracheal rings were detached from above downward. The hypoglossus nerve and the lingual artery were wounded. Considerable bleeding ensued from the upper corner of the wound, which was repressed with wood-wool tampons, and arrested by ligatures after the detachment of the larynx had been completed. The wound was tamponed with iodoformed gauze, and covered lightly with carbolized gauze. The patient coughed several times directly after the trachea had been opened, and an extensive emphysema ensued, reaching from the middle of the chest up to the eyes. Rigor occurred on the fourth day; facial erysipelas developed from the nose, and extended the next day over both cheeks. Death on the eleventh day. Autopsy: Erysipelas faciei et capitis; tracheitis et bronchitis; pneumonia catarrhalis.

II.—May 29, 1886. Tradesman, aged fifty-one. Dysphagia of a year's duration; hoarseness; dyspnœa; weakness. Intralaryngeal treatment had been of no avail. A grayish, irregular tumor beneath the epiglottis, on the left side, nearly occluded the larynx. Low tracheotomy, insertion of the iodoformed sponge canula, and incision, as above. Exposure of the larynx and laryngo-fissure. The tumor extended into the upper end of the trachea. The larynx was severed just above the cricoid cartilage and then detached, in part with the thermocautery, from below upward, together with the epiglottis and the hyoid bone. The extirpation was completed by removing the cricoid cartilage and the two upper rings of the trachea. The œsophagus was stitched to the skin. Moderate bleeding, arrested

with wood-wool tampon. Dressing as in Case I. The course of the case was remarkably good. On the second evening only the rectal temperature reached 38.8°. The sputum was not bloody, even directly after the operation. The tampon canula was changed for an ordinary one in twenty-four hours. The general well-being was not disturbed, respiration through the canula was free, and there was only a slight bronchial catarrh. The patient was fed twice a day through the tube; and was quite late—six weeks—learning to swallow first solid, and then fluid nourishment. About the same time an artificial larynx was introduced, and the patient learned to speak with it so as to be understood.

August 11th dismissed from the hospital. In November the patient wrote that he had severe pain in swallowing and distressful salivation. In March, 1887, he wrote that his sufferings had increased, and that for some months he had been conscious of a hardening in his throat, which had increased very much. He was so ill that he dreaded to leave his home. In this case, therefore, there had been recurrence in all likelihood.

III.—Man, æt. fifty-four, hoarse for a year. An irregular, grayish tumor, imbedded in nearly the whole left vocal band, and microscopically a cornifying cancroid. Tracheotomy, tamponade, laryngo-fissure; extirpation of left half of larynx, except the cricoid cartilage. Course normal. This is Semon's case, *Brit. Med. Journ.*, No. 1351.

IV.—In this instance a proposed extirpation was found unnecessary at the time. A merchant, æt. thirty-seven, relieved several times of dyspnœa from a small laryngeal tumor, by intralaryngeal evulsions; but the last operation, three days before, had given no relief. Operation immediately on entrance. High tracheotomy; tamponade; laryngo-fissure. A hard, circumscribed tumor, ulcerating superficially, reached as far as below the right vocal band. The tumor was so superficially implanted, and so circumscribed, that laryngectomy seemed unnecessary, and the ulcerating mass was scraped out and the parts seared with the thermo-cautery. Iodoform tamponade of the wound. The canula was changed for an ordinary one on the next day, and this was permanently removed on the twentieth day. On the thirty-eighth day the patient was dismissed with free respiration, and a good, though hoarse, voice. Recurrence in the same locality, three months after operation. Partial resection of the larynx may become necessary.

Concerning the subsequent history of Hahn's nine previous total extirpations for carcinoma and sarcoma, two are dead from recurrence—one six months, the other (sarcoma) four months after operation. One, operated on in 1880, still lives, seventy-five years of age, is hearty, and speaks with an artificial larynx. Another is living, but has had recurrence. Of the entire ten cases of total extirpation, four died within a few weeks—one of erysipelas, one of mediastinitis, one of pleuritis and pulmonary gangrene, and one of pneumonia.

Of the four partial resections none died from the results of the operation. Two of these were for carcinoma. In one there was recurrence within four months, and then the extirpation had to be made complete.

REVIERE'S SEDATIVE POTION.—DR. GENEUIL suggests the following modification of this well-known and valuable officinal preparation where there is vomiting, accompanied and caused by hepatic or enteric pains:

℞.—Hydrochl. of morphine	. . .	gr. j.
Cherry laurel water	. . . .	℥ijss.
Sulphuric ether	. . . .	℥j.
Water to make	. . . .	℥vij.

Mix, dissolve, and divide into two equal parts. To the first add one drachm of bicarbonate of potassium and one ounce of syrup of orange flowers. To the second add one drachm of citric acid and one ounce of aromatic syrup of citric acid (flavored, if desired, with essence of lemon). A tablespoonful of each mixture to be administered (by itself) every five minutes until relief is obtained. The alkaline syrup should be given first. If the pains are not very severe, or the patient be very nervous, the morphine may be replaced by double the indicated quantity (or two grains) of codeine.—*Technics*, May 17, 1887.

PEPTONES IN THE BLOOD AND URINE.—GEORGES is quoted by the *American Journal of Pharmacy* for May, 1887, as giving the following methods:

1. This has been recently employed by Wassermann for the detection of peptones in the blood. The blood is received in strong alcohol; the clot thrown on a filter is washed first with cold then with boiling water; the aqueous solution is concentrated to about double the volume of the blood taken, and then added to the alcoholic solution; sodium acetate and ferric chloride are now added to the liquid. After filtration and cooling, the last traces of albumen are removed by adding potassium ferrocyanide and acetic acid, filtered, the excess of ferrocyanide precipitated by copper acetate, filtered, excess of copper removed by hydrogen sulphide; filtered again, and heated on the water-bath to expel hydrogen sulphide and to concentrate the liquid. This method gives good results, especially if care be taken to neutralize, or even to add any slight excess of alkali on adding the sodic acetate and ferric chloride. It also serves very well for the investigation of peptones in urine, commencing by boiling to precipitate albumen coagulable by heat, and terminating as above.

2. The double iodide of potassium and mercury precipitates albumen and the peptones, and Tanret has shown that the albuminous precipitate is insoluble in boiling acetic acid, whilst the peptone precipitate dissolves completely. Employing these reactions, Georges has established a much more rapid method as follows: Precipitate by heat all the coagulable albumen; treat the urine with acetic acid and the double iodide, wash the precipitate on a filter with cold water charged with acetic acid to the same extent as the urine; wash again with the same acidified water boiling, keeping the washings apart. The clear liquid obtained gives a precipitate on cooling if the least trace of peptonic precipitate has been dissolved. It is only necessary to neutralize in order to obtain a solution to which the double iodide test can be applied.

USEFUL PREPARATIONS OF IODOL.—DR. WOLFENDEN, of London, mentions in the *Practitioner* for May, 1887, the following as preparations which he has found useful:

1. *Powder of Iodol.*—The pure powder may be used.

There is no need to mix it with starch or sugar, etc., since, being fine, it is readily dusted over a raw surface, or insufflated into the throat. Possessing no toxic power, it is of more importance to cover the diseased surface than to measure the dose. For all laryngeal, pharyngeal, and most nasal and oral conditions this is, perhaps, the most generally useful application.

2. *A solution in Alcohol and Glycerine.*—This was Mazzoni's original application: iodol, 1 part; alcohol, 16 parts; glycerine, 34 parts. This forms a good application by means of the brush, or may be used as a very coarse spray.

3. *Iodol*, 1 *drachm*; *Ether*, 1 *ounce*.—This forms a clear brown solution, useful for application either by the spray or brush. The ether quickly evaporating leaves the powder *in situ*. It is useful for naso-pharyngeal atrophic conditions.

4. *Iodol*, 1 *drachm*; *Glycerine*, 1 *drachm*; *Vaseline*, 7 *drachms*.—This is a modification of one of Rumbold's sprays. It is a very soothing application for pharyngeal conditions. It requires to be warmed before using.

5. *Iodol Pastilles*.—(Iodol, 1 grain; glycerine, 1 minim; glycogelatine, 18 grains.) These are very useful for chronic pharyngeal conditions, and are much preferable to iodoform pastilles.

6. *Iodol Bougies*, containing ½ a grain iodol in each. These are made for use in diseased nasal conditions.

7. *Iodol Wool*, 10 per cent., for tampons, etc.

8. *Iodol Gauze* for dressings.

LAPAROTOMY FOR TUBERCULAR PERITONITIS.—KÜMMEL, of Hamburg, at the recent meeting of the German Surgical Congress, reported two cases of tubercular peritonitis treated by laparotomy, as follows:

The first was the case of a young woman in whose abdomen encysted dropsy existed, in which the retro-peritoneal glands were found; the cavity was studded with miliary tubercles. The abdominal cavity was disinfected and sutured; perfect recovery followed.

The second case was that of a man, aged twenty, who had ileus after an operation for caries of the os calcis. The intestine was found almost ligated by adhesions. By enveloping the intestine in carefully antisepticized napkins the adhesions were severed, the tissues properly united, and the abdomen closed. Recovery followed, but general tuberculosis followed later.

Kümmel cited 30 cases, of which 25 were well at the time of his report. In 11 cases the diagnosis was confirmed by the microscope.—*Berliner klinische Wochenschrift*, May 23, 1887.

FOURNIER'S TREATMENT OF SCABIES.—1. A thorough application of soap, followed by a full bath.

2. Frictions over the body with the following mixture:

Glycerine	2 parts.
Gum. tragacanth.	$\frac{1}{100}$ part.
Flowers of sulphur	1 "
Sodium carbonate	½ "

after which a second bath must be taken; the personal and bed linen should be carefully laundried, and gloves which have been worn should be burned. On the day following, emollient baths and the use of powdered starch, or glycerite of starch will be found useful.—*Les Nouveaux Remèdes*, May 24, 1887.

RESULTS OF TREATMENT FOR DIPHTHERIA IN THE OLDENBERG HOSPITAL.—LUNIN reports 296 cases, of whom 164 died; 57 were treated with sublimate applications 1 to 1000, and washing out the pharynx with 1 to 5000; of these patients the mortality was 43 per cent. In a series of cases treated with resorcine 10 to 100 and irrigations with a solution of 1 to 100, the mortality was 65 per cent.

Pencilling the fauces with lanoline 1 to 10, and irrigation with alcoholic solution of lanoline, 2 to 100, was employed in 28 cases, whose mortality was 53 per cent.

94 cases were treated with ferric chloride, 1 or 2 drops every half hour. The mortality was 56 per cent. In addition the pharynx was irrigated with boric acid solution, 1 to 300. The treatment with bromine water gave a mortality of 69 per cent, and treatment by essence of turpentine, 10 drops every hour, 43 per cent.

The statistics are not sufficient to establish the value of any medicament. Turpentine gave the best results in the fibrinous form and iron in the phlegmonous form. Laryngeal complications were treated by inhalations and a solution of sodium bicarbonate, corrosive sublimate, and apomorphia internally, and, as stimulants, the free use daily of tea and rum.—*Gazette Hebdomadaire*, May 27, 1887.

CÆSAREAN SECTION IN HOLLAND.—MAASEN, of Holland, is reported, in a recent Dutch medical journal, to have performed Cæsarean section on a primipara, a dwarf, the *conjugata vera* of whose pelvis was two and one-third inches. The wounds healed in twelve days, and mother and child made a perfect recovery.

Maasen attributes his success to antisepsis and to having abstained from attempts to deliver by forceps.

TRACHEOTOMY IN THE CHARITÉ CHILDREN'S HOSPITAL AT BERLIN.—After eliminating twenty-five children under two years of age, there were, out of 128 cases, 20.4 per cent. of cures for croup, and 18.75 per cent. of cures for diphtheria. It is not necessary to perform the operation after the first attack of asphyxia.—*Journal of Laryngology*, May, 1887.

BUROR'S FLUID.—This liquid is used where the antiseptic dressings, for any reason, cannot be applied. Its formula, from the Pharmacopœia of Belgium, is as follows:

Crude alum	75 gr.
Crystallized potassium acetate	12½ ʒ.
Distilled water	1 quart.

Mix, dissolve, filter.

For external use only.

THE DIAGNOSIS OF CANCER BY THE EXAMINATION OF THE BLOOD.—HAYEM has recently read a paper on the leucocytosis accompanying the development of neoplasms. A cubic millimetre of blood should yield normally 6000 white blood-corpuscles, but the numerical fluctuations are greater for white than for red blood-corpuscles. Hayem, assisted by M. Alexandre, draws the following conclusions: Scirrhus and encephaloid cancers are accompanied by a slight increase in the number of white blood-corpuscles. The leucocytosis is much more marked with osteo-sarcoma and lympho-sarcoma.

Epithelioma has the least influence in inducing an increase in the white corpuscles. Hayem believes that the leucocytosis may prove of diagnostic service, and mentions a case of doubtful epithelioma of the foot in which M. Alexandre counted 14,000 white globules per cubic millimetre; it was thought during the life of the patient, from this circumstance and from the absence of inflammatory complications, that the disease might be cancerous. The case terminated fatally after operation, and the necropsy revealed several visceral neoplasms of encephaloid structure.—*Lancet*, June 4, 1887.

LITHOTOMY IN RUSSIA.—At the Second Congress of Russian Surgeons, held at Moscow, NIKOLSKY reported the results of lithotomy as practised by Russian surgeons. 318 cases of the lateral operation were reported with 30 deaths; 29 median operations with 1 death, and 51 suprapubic lithotomies with 14 deaths. The choice of lithotomy over litholapaxy is accounted for by the fact that these patients commonly seek surgical aid when the calculi have become very large and crushing was impossible.

Nikolsky formulates his indications for the various operations as follows: If the stone be large and smooth, the urine relatively normal, and the surgeon hopes to remove the stone quickly, as well as when the stone is in a pocket of mucous membrane, the suprapubic operation is indicated. When the stone is small in adults, and the urine nearly normal, the median incision is preferred. If the bladder is hypertrophied, the lateral incision is made. When severe cystitis is present, the bladder is treated as an abscess cavity and drained by the lateral incision.—*Centralblatt für Chirurgie*, May 28, 1887.

PHOSPHORUS AND ITS ADMINISTRATION.—SOLTMANN condemns all aqueous preparations of phosphorus, and recommends the oily preparations, and especially an oily solution of 1 to 500. In its preparation three grains of phosphorus are dissolved in three and one-eighth ounces of oil of almonds over a water bath; when the phosphorus has been previously thoroughly dried and the process is carefully conducted, the phosphorus is never deposited. The physician may order as follows:

℞.—Phosphori . . . . . gr. ⅙
Ol. morrh. . . . . ʒ 3⅛.—M.

Sig.—Daily one teaspoonful, which may be conveniently dispensed by adding five grammes (ʒ 1¼) of the almond oil solution of phosphorus to ninety-five grammes (about three ounces) of cod-liver oil.

The following formula may also be employed:

℞.—Phosphori . . . . . gr. ⅙
Ol. amygdal. amar. . . . ʒ 2½
Aquæ destill. . . . . ʒ 20
Gummi arab. . . . . ʒ 2½.—M.
Ft. emuls.

Sig.—One teaspoonful daily.—*Therapeutische Monatshefte*, May, 1887.

STERILIZED BANDAGE MATERIAL.—At the recent meeting of the Society of German Surgeons, SCHLANGE, of Berlin, made some remarks upon materials for dressing wounds, which we summarize as follows: None of the dressings at present used and impregnated with antiseptics, perfectly destroy bacteria in wounds. It has been shown that sublimated gauze, when immersed in blood or hydrocele fluid, permits the growth of bacteria, because the sublimate enters into combination with a portion of the albuminoids, and the bacteria flourish in the remaining albumen, which becomes a culture medium.

SCHLANGE advised the use of dressings as prepared for Bergmann's clinic, by sterilization with hot steam at 100° C., and drying. The impregnation with sublimate is omitted. Such sterilized dressings are placed upon the wound.

VOLKMANN advised the retention of iodoform as an antiseptic, and described his custom of placing iodoform gauze immediately upon the wound, and over that a peat-bag without any antiseptic substance. Lister's dressing, he thought, was often a fomentation to a wound. He had excellent results with this treatment.

VON BERGMANN thought that our study of the treatment of wounds should now be directed to finding a perfectly sterile dressing.

KÖHLER thought sublimate gauze, for army service in the field, a sterile dressing.—*Berliner klinische Wochenschrift*, May 30, 1887.

A FORMULA FOR THE USE OF BISMUTH IN THE SUMMER DIARRHŒAS OF CHILDREN.—

℞.—Bismuth. subnit. . . . . gr. 10.
Mucilag. trag. . . . . ♏ 20.
Aq. chloroform. . . . . ʒj.

for a child seven months old, every six hours.—DR. ANGEL MONEY, in *Treatment of Disease in Children*.

POISONING BY PILOCARPINE.—DR. A. G. GLINSKY, of the Kharkov Alexandrovskaia Infirmary, reports (*Proceedings of the Kharkov Medical Society*, part 1, 1886, p. 109) a case of poisoning by pilocarpine—the first of its kind, according to the writer, in medical literature. A gentleman who had been in the habit of using a solution of pilocarpine as a stimulant for the hair, swallowed a considerable dose of the fluid, instead of a solution of quinine. About five minutes afterward profuse perspiration, first of the face and then of the whole body, set in, together with salivation. These symptoms were speedily followed by dimness of sight, prostration, trembling of the limbs, a sensation of cold, noise in the head, and a general sense of confusion. On seeing the patient, about an hour after the accident, Dr. Glinsky found profuse, cold, clammy sweat in big drops on the face and body, coldness of the limbs, slight cyanosis of the hands and lips, a subnormal temperature, pulse 84, full, dicrotic, respirations 14, profuse salivation, great contraction of the pupils, spasmodic shiverings, general restlessness, extreme weakness, and trembling of the lower extremities. The treatment consisted of the internal administration of tannin, and emetics, together with the hypodermatic injection of atropine (1/30th of a grain, given in three doses). A quarter of an hour after the injections a striking improvement took place; the perspiration ceased, the pupils became dilated, and tremor disappeared, and on the following day the patient was quite well.—*British Medical Journal*, May 21, 1887.

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THE TREATMENT OF SYPHILIS BY HYPODERMATIC INJECTIONS OF MERCURY.

NOTWITHSTANDING the fact that this method of treating syphilis has been before the profession almost ever since the introduction of the hypodermatic use of drugs by Alexander Wood, of Edinburgh, in 1857, it is only within the last year or so that it has in reality received much attention. In 1861, Hebra used injections of corrosive sublimate in the treatment of a papular syphilide occurring in a woman of twenty-one years with success (*Allgem. Wiener med. Zeitung*, 1861, No. 30), but it was not until 1864 that calomel was used in this manner, suspended in a gummy liquid, in the proportion of one-third to one-half of a grain of calomel to twenty-five minims of water or glycerine by Scarenzio, whose report may be found in the *Annales Universelles de Médecine*, 1864.

Berkeley Hill, Ambrosoli, Ricordi, and Montefork, the first in the *Lancet*, in 1866, the last in an inaugural dissertation at Marburg, in 1869, were the next observers to record their experiences with this method, and since then the number of observers has increased to such an extent as to render an attempt at any further historical sketch impossible. Suffice it to say that till lately corrosive sublimate has been much more generally used in this manner than has its more insoluble sister salt calomel, although for some unknown reason the latter preparation seems to be the favorite just at present. Within the last few months a larger number of papers have appeared on this subject than have usually come out in several years. ZEISSL, in the *Centralblatt für die Gesammte Therapie* for June, 1887, gives a very interesting sketch of the use of mercury in this manner, both historical and therapeutical, and another equally interesting paper appears in the *Gazette médicale de Paris* for 1887, Nos. 22 and 23, in which the use of calomel is alone considered.

It at once becomes evident to the thoughtful physician that calomel is, to say the least, a most unfavorable variety of remedy for such a use owing to its insolubility, whereby it is liable to cause inflammation or abscess more rapidly than a systemic influence, and this theoretical deduction has, to a certain extent, proved practically true, although the occurrence of well-developed abscess has been comparatively infrequent, the percentage of their occurrence varying from fourteen to four per cent. of all the cases treated. This variation in the frequency of abscess under this treatment may, of course, have many factors back of it, the most important being cleanliness and the character of the vehicle used by the different observers. The general opinion seems to be that vaseline is by far the least irritating and best vehicle used for this purpose, but, nevertheless, inflammatory conditions are common sequences of its use and come on with sufficient frequency to prevent its general employment.

Other vehicles for administering calomel in this manner have been saline solutions, made by the addition of common salt to distilled water in the proportion of five parts of salt and fifty of water, but the results have been still less favorable. If we consider for one moment the fact that calomel is, when taken internally, dissolved by the gastric acid and then precipitated by the alkaline juices of the intestines, it at once becomes clear that in its injection into the connective tissue it meets no acid, but rather an alkali, and remains undissolved to a very great extent by the juices of the surrounding region. Practical experience has shown, however, that salivation may be produced by its hypodermatic use, thereby proving that it is to some extent absorbed.

The use of corrosive sublimate by the subcutaneous method is hardly more sensible than the corresponding use of calomel, for although it is nonsoluble and less apt to act as a passive foreign body, it is far more irritating. The same chemical objection also obtains here, namely, the fact that an acid salt is to be brought in contact with alkaline juices, and there seems to be no more reason for making such a combination hypodermatically than there is for so doing in a prescription for internal use.

The advantages accruing from such a line of treatment are not readily perceived, and when at last they are discovered are so small as compared to the disadvantages as to lose all weight. Of course, cures and favorable results have been obtained from such practices, as is often the case, be the remedy what it may; but the very fact that this method has remained comparatively unused, except as an ex-

periment for so many years, is at least a good example of the common sense of the medical profession in general, and should prevent the physician from putting into execution any such procedure unless some peculiar chain of circumstances renders it necessary, as in the case of localized gummata situated in dangerous but yet readily approached positions, the rapid breaking down of which may prolong or save life.

CARDIAC DYSPEPSIA.

FOR a long time it has been recognized that various forms of cardiac disorder, such as palpitation, irregular action, intermittence, syncope, and even angina, may be due to an irritation reflected from a diseased gastric mucosa. It is only of late, however, that cardiac disease has become a recognized factor in the production of gastric disorder. The two conditions, cardiac and gastric disorder, whether functional or organic, are almost invariably associated, and it is a difficult, and often an important, problem to decide which of them is primary. An attempt to render this easier has been made by DR. SOLARO, in *La Medicina Contemporanea*, for March, 1887, who takes as the text of his discourse the Paris thesis of Müller for 1886.

According to Solaro, three types of cardiac dyspepsia may be recognized: 1. A nervous form in which pain is the principal element. The pneumogastric is tender in its accessible points, and there are frequent attacks of gastralgia and pyrosis. As the case progresses the par vagum becomes exhausted, the muscular tunic of the stomach loses its tonicity, and the viscus is in a state of permanent dilatation. This variety is observed in cases of angina pectoris, in exophthalmic goitre, and, in general, in those cardiac diseases in which the nervous element predominates.

2. An anæmic form, distinguished by pain which is acute but fugitive. The digestive functions are accomplished slowly but, in comparison with the former variety, satisfactorily. This form is peculiar to aortic lesions, stenosis, and insufficiency, in which there is either a continual diminution of arterial pressure (stenosis), or the organs are intermittingly supplied with arterial blood (insufficiency).

3. A congestive form in which, while the pain is less severe, the functional disturbances and the lesions of the stomach are much more pronounced. This variety depends upon lesions of the mitral valve, and upon those of the right heart.

It is only in the latter form that typical alterations of the stomach are encountered. The organ is usually dilated, and its walls thickened and congested. The mucosa is covered with a grayish, transparent mucous, or, in more severe cases, with a whitish, pultaceous exudate, resembling a diphtheritic false membrane. This being removed, the mucosa is red, infiltrated with serum, suffused with extravasated blood, or riddled with a multitude of minute erosions. The veins are varicose, and more or less dilated. Many of the peptic glands are atrophied, and their cells filled with fat granules. Atheroma of the gastric arteries is encountered, especially in those cases in which the same lesion exists in the aorta.

The disastrous effect upon nutrition of these secondary gastric changes is manifest without recalling the fact that the only possible *raison d' être* of several fatal cases of pernicious anæmia had been found in similar lesions.

In the treatment of cardiac dyspepsia the pathogenesis of each variety is to be borne in mind. In all three forms the ordinary eupeptics are indicated, while in those of nervous origin, washing out the stomach has been found to be an excellent sedative. In the second and third varieties the remedies are to be chiefly addressed to the heart, the *fons et origo mali*. In the anæmia of heart disease, the *cachexie cardiaque* of French writers, good results have been reported from the use of arsenic.

THE PROGNOSIS IN THE CROWN PRINCE'S CASE.

As we stated last week, the latest professional reports of the condition of the larynx of the German Crown Prince are not at all indicative of malignancy; and now, in view of the apparent success of the operative treatment, the question as to the liability to recurrence of the growth becomes of the greatest interest. In our opinion the commonly estimated ratio of recurrence of papilloma in the larynx is far too high, and many so-called cases we believe are simply recrudescences of fragments of imperfectly removed growths. As a rule a patient, especially if away from home, passes from under treatment as soon as possible after obtaining relief from the malady for which he sought advice; and often, in cases of papilloma, with remnants of the growth unremoved. Hence it is of importance to keep a patient under observation for several weeks after the cessation of operative procedures.

Fresh growths, however, are liable to occur in a larynx, which has been previously the seat of papilloma, just as the earlier growths did in the first place. This does not often happen unless the individual is extremely careless in exposing himself to cold, or in over-using his voice especially when hoarse—conditions that aroused the morbid activity which culminated in the original growth. For these reasons we are inclined to believe that, under proper supervision, and with the exercise of ordinary prudence as to exposure and the use of the voice, neither recurrence of the old growth nor development of a new growth in a fresh location is to be feared in a

larynx carefully freed from papilloma and kept under observation for a reasonable period thereafter.

SOME PHYSICAL DIFFERENCES BETWEEN MEN AND WOMEN.

IN an article upon the "Mental Differences between Men and Women," which lately appeared in *Nineteenth Century*, GEORGE J. ROMAINES claims that, as the average brain-weight of women is about five ounces less than that of man, on merely anatomical grounds we should be prepared to expect a marked inferiority of intellectual power in the former. This difference, he states, is proportionally greater than that between the female and male organism as a whole, and is largely affected by the grade of civilization, being least in savages.

Upon the authority of Sir J. Crichton Browne, he strengthens this view as to the brain inferiority of the female, by the further statement that from investigations now being made by the latter, not only is the gray matter of the brain less deep in the case of the female than it is in that of the male, but also receives less than a proportional supply of blood. For these reasons, and also because the differences begin in embryonic life, Browne regards them as "constituting a fundamental sexual distinction, and not one that can be explained on the hypothesis that the educational advantages enjoyed either by the individual man or by the male sex generally through a long series of generations, have stimulated the growth of the brain in the one sex more than in the other."

As is well known, the differences between the male and the female pelvis, the latter indicating very clearly its adaptation to childbearing, are very obvious, so that the two, when typical forms are observed, may be readily distinguished.

Here, too, there is a corresponding fact to that stated as to the relative difference between the brain of man and that of woman, this difference being less marked in savage races, for in the pelves of the lower races the sexual characteristics are less obvious; that is, the male and female pelvis resemble each other more closely. In some instances this resemblance is so great that it is difficult to distinguish between the two.

Romaines attributes the mental differences between men and women to the Darwinian principle of selection, both natural and sexual, by the one being meant the contest between rival males, and by the other success in the general struggle of life; and, using the words of Darwin: "as in both cases the struggle will have been during maturity, the characters gained will have been transmitted more fully to the male than to the female offspring."

But conceding this as the explanation of the larger brain of the male, and hence the greater mental power, how is the pelvis of the female made to differ more strikingly from that of the male in the advancement of a race? Its final cause is quite obvious, for with a greater brain development there is corresponding increase in the size of the cranium, and there must necessarily be a larger bony birth canal through which it is to be transmitted. Its active cause may have been sexual selection, the successful male selecting the female whose general form, including that of the pelvis, differs most decidedly from that of the male, until in long generations and with the higher development of civilization the original difference becomes more marked until finally the typical female pelvis is produced.

THE Coroner of Philadelphia held an inquest last Monday on four of the cases of poisoning from eating buns colored with chrome yellow, to which practice public attention was first called by THE MEDICAL NEWS, six months ago. The use of chrome yellow to give a rich egg color to the cakes sold by the baker was proved, and the evidences of lead were found on chemical analysis in the viscera. The jury rendered a verdict, "That the deaths, in their opinion, were undoubtedly due to chronic lead poisoning, and that the poisoning resulted from the use of chromate of lead as a coloring matter in buns and other breadstuffs." The Coroner thereupon held the baker, in whose own family there had been six cases of poisoning from this cause, to await the action of the Grand Jury.

Suits to recover damages for sickness, suffering, and death have also been begun against several parties who are charged with adulterating, and causing to be adulterated, buns and cakes, and selling, and causing to be sold, "adulterated articles of food colored with injurious, fraudulent, and poisonous coloring matter."

IN another column we present an abstract of the report of the British Hydrophobia Commission, which constitutes the ablest defence of M. Pasteur's method which has yet been made, and it is a cause for congratulation that men so competent to observe facts and weigh evidence have been able, after full investigations, to reach a unanimous conclusion as to the prophylactic value of the inoculations of Pasteur.

THE anxiously-looked-for autobiography of the late DR. SAMUEL D. GROSS has just been issued from the press of George Barrie, in two very handsome octavo volumes, of over 400 pages each. The work treats of the men and times of Dr. Gross's long and active professional life, and cannot fail to prove of deep interest to a large circle of readers. We shall review it at an early day.

THE American Neurological Association will meet at the West End Hotel, Long Branch on July 20th, 21st, and 22d, under the Presidency of Dr. Landon Carter Gray, of Brooklyn.

THE yellow fever is reported to be slowly increasing at Key West. Last Saturday there were five new cases and two deaths. On Tuesday there were the same number of new cases and one death. The record to July 10th stands: Total cases, 83; deaths, 27; sick at present, 33; discharged cured, 23.

A temporary refuge station is being established by the Marine-Hospital Service at Egmont Key, where ten days' detention will be required, and disinfection of baggage will be carried out.

DOCTOR HENRY CARPENTER died at Lancaster, Pa., on July 9, 1887, aged sixty-eight. He was the fifth physician in a family of recognized ability in medicine and politics, and was one of the first students who matriculated at the Pennsylvania Medical College. After graduation he practised his profession at Lancaster, where he proved a skilful surgeon, obstetrician, and general physician. He was especially versatile in his talents, and combined good mechanical ability with excellent judgment. Both previous to and during the war of the Rebellion he rendered the Government valuable professional services.

Dr. Carpenter was also actively interested in politics, and in the development of the mercantile interests of his home; and his position in the community in which he lived was one of honor and influence.

REVIEWS.

EVACUANT MEDICATION. By HENRY M. FIELD, M.D., Professor of Therapeutics, Dartmouth Medical College, etc. Philadelphia: P. Blakiston, Son & Co., 1887.

THIS book is a concise *résumé* of the notes of extensive clinical observation as prepared for lectures, supplemented by study of the current literature of the subject. The author's purpose was "to provide a practical study of the individual action, application, and contra-indications of the more prominent cathartic agencies;" and this has been accomplished in a clear, forcible, and practical manner.

Among the many points of interest presented, we notice the endorsement of the commonly received doctrine of the emmenagogue properties of aloes; and the successful treatment of gonorrhœa by the vinous tincture of colocynth. The distinction between cathartics and cholagogues is sharply drawn, and the fact that hydragogues are depressants of bile formation is emphasized. The use of calomel receives the critical discussion which its importance justifies, and its position and dosage as a cholagogue are clearly defined.

A number of convenient formulæ are given, of which we quote the following, as valuable in administering castor oil in the treatment of dysentery:

℞.—Ol. terebinth. . . . gtt. 80.
Ol. cinnamon. . . . ♏ 5.
Ol. ricini . . . . ʒ 5.
Mucil. acaciæ . . . q. s.
Syr. simpl. . . . q. s.
Aq. puræ . . . . q. s. ad ʒ 2.

Sig.—Shake thoroughly. One teaspoonful, repeated as needed.

The author's presentation of emetic medication, and also "super vomition," is suggestive and valuable; the omission of cocaine from the remedies advised for obstinate emesis is, however, noticeable.

No remedies are more commonly used and abused than evacuants, and books of the practical value of Dr. Field's cannot fail to interest and serve the profession.

CORRESPONDENCE.

LETTER FROM MUNICH.

The Royal University—Laparotomy in Rupture of Uterus—Osteomalacia—Use of Anæsthetics—A New Work on Obstetrics.

THE number of students in the Royal University here is 3389. The medical department has 1186; of these, only 508 are Bavarians, the relative proportion of the foreign element marking well the reputation of the school. I saw two Japanese, and found several Americans among them.

Having seen in the report of the obstetrical department a number of cases of rupture of the uterus, and no laparotomies mentioned in connection, I inquired as to this point, and learned that there had been no case since Prof. Winckel took charge in which the circumstances justified the operation. This measure is fully recognized, and he has performed laparotomy for ruptured uterus three times, all the cases successful. The pelvis of one is in his collection, and is a most interesting specimen of osteomalacia. The professor and his father were about to perform the Cæsarean section when the rupture took place, and the laparotomy followed immediately. The patient lived fourteen years afterward.

There was an interesting case of osteomalacia in the wards. Patient, aged thirty-seven, had had eight children, the last several years ago. The pelvic deformity had advanced to such a degree that the finger could scarcely be passed between the rami of the pubes up to the symphysis. She was in bed, and having constitutional treatment.

In regard to anæsthetics. So far, chloroform alone has been seen here, and I am informed that this is the only anæsthetic used throughout Germany, except at Vienna, where Billroth uses a mixture of chloroform and ether. I can learn of no accidents, and when they were inquired for, the opinion seemed to be that they might and did occur under all anæsthetics, while chloroform presented great practical advantages over the others. Prof. Winckel expressed much dissatisfaction at what he witnessed of ether administrations during his visit to our country. Administration of chloroform here is by means of a small wire mask, just large enough to cover mouth and nose, over this is stretched a layer,

perhaps two, of some light material, and upon this the liquid is dropped or sprinkled. It is an unexceptionable method; first, negatively, air cannot be shut out from the patient; second, positively, it insures complete mixture of the vapor with air. This cannot be said of the administration by a towel upon which chloroform is poured, and there is no doubt that that mode of administration is one factor in causing fatal accidents. In one case in which there was a good deal of embarrassment to the respiration, the administrator bent the patient's head backward, and elevated the lower jaw by placing his fingers behind the rami.

The injection of narcotics a short time previous to the administration of chloroform, is not practised here. I called upon Prof. Nussbaum especially in regard to this point, because his name is connected with the very first steps of this practice. Neither morphia nor atropia, or the two combined, is given here or elsewhere in Germany, so far as I could learn. I was particular to inform myself in regard to this point, which I firmly believe to be one of the greatest practical value in connection with the administration of anæsthetics.

Prof. Winckel has in preparation, and nearly ready for publication, a new work on obstetrics. An entire new set of illustrations is promised, and those who are acquainted with his photographic illustrations of the pathology of the female sexual organs, will know what may be expected.

MUNICH, June, 1887.

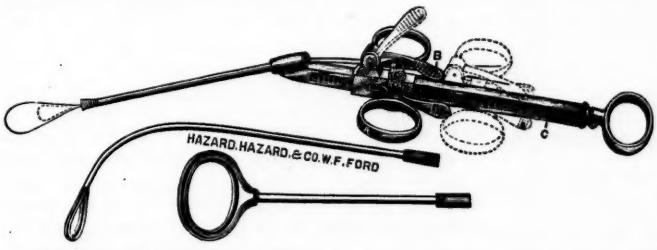
NEW INVENTIONS.

A NEW SNARE AND ÉCRASEUR.[1]

BY C. SLOVER ALLEN, M.D.,

ATTENDING SURGEON TO THE THROAT DEPARTMENT OF BELLEVUE HOSPITAL OUT-DOOR RELIEF.

IN operating on the nose and throat, I have frequently felt the need of some rapid-working snare, which might be easily manipulated with one hand, and which should, moreover, possess sufficient power to remove dense tissue. The snare here depicted was devised to fulfil these conditions, and not to supersede any of those simpler and lighter ones now in use.



The power employed is not that of the screw, but of the lever, and is applied by means of a double lever, worked alternately by the middle and forefinger. As the instrument is made of steel, it will stand heavy work in operating on other parts of the body. It can be worked perfectly with one hand, while the other holds the speculum or mirror, and no part of the instrument or hand interferes with a clear view of the part operated on. The wire loop can be quickly and firmly contracted around the base of the tumor, and then, without delay, great power can be applied, and the tissue cut through as rapidly or as gradually as desired. The ends of the wire are quickly fastened or released by the simple movement of a lever, and will not slip. The laryngeal and post-nasal tubes can be inserted at different angles, so that the hand can be held in the most convenient position for working. The instrument is especially adapted for operations where rapid work is called for. The ends of all the tubes are flattened, so as to keep the wire loop from twisting, and to enable the operator to know its exact position. After cutting through, the slide can be released and pushed up to its former position by pressing back the catches on either side with the thumb and forefinger.

The different parts of the snare are not very clearly shown in the cut. The square shaft (*C*) is of steel, having at its upper end a socket for the insertion of the tubes, while at the lower end is a swivel thumb-ring. On either side of the shaft is a line of ratchet-teeth, which are countersunk, so as to allow the square tube to slide freely upon the shaft. Upon the upper part of this square tube there is a device for fastening the ends of the wire. It consists of a lever attached to an excentric, beneath which the wire passes when the lever is raised. When the lever is depressed (as shown at *B*) the wire is firmly pressed down upon the slightly roughened bed-plate. Strain upon the wire tends only to draw the lever down tighter, so that the wire will break before slipping. The two rings (*A*) are connected by a double lever which, at the centre, loosely surrounds the square tube or slide, and is pivoted to it above and below. The lever rotates on these pivots, and carries on either side a ratchet catch, pivoted in the arm, and at one end pressed down by a spring against the ratchet teeth through a slot in the slide. If the rings are pulled upon simultaneously, the wire may be quickly drawn down, and is held by the ratchet. If the fingers are used alternately, one ratchet is drawn down over one or two teeth, while the other holds fast. A great leverage power is thus exerted upon the wire. A slight pressure upon either ring develops a power greater than that readily obtained in instruments in which the screw is used.

The lower figure in the cut represents a modification for the removal of the tonsil. It consists of a split ring, between the sides of which the wire is concealed, and held in place by small projections. The ring having been pressed over the tumor in the usual way, traction with the fingers, exerted simultaneously upon the two arms of the lever, quickly draws the loop from the cleft of the ring and contracts it upon the tumor; then alternate traction will cause the wire to cut through. The proceedings can be easily watched. Steel piano wire, No. 5, is the smallest that can be used for this heavy work, and is the size best adapted to the instrument for general work. There are similar attachments for the larynx and vault of the pharynx. These split rings are of various shapes, and are placed upon the tubes at different angles. The instrument is especially useful in operating on tumors of the larynx.

NEW YORK, 21 EAST TWENTY-EIGHTH STREET.

[1] Exhibited before the Laryngeal Section of the N. Y. Academy of Medicine.

NEWS ITEMS.

THE REPORT OF THE BRITISH COMMISSION OF INQUIRY INTO M. PASTEUR'S TREATMENT OF HYDROPHOBIA.—The report of the Commission appointed last year by the President of the Local Government Board to inquire into M. Pasteur's treatment of hydrophobia was presented to Parliament last week. The Commission consisted of Sir James Paget (Chairman), Sir Joseph Lister, Sir Henry Roscoe, Dr. Richard Quain, Dr. Lauder Brunton, Professor Burdon Sanderson, Dr. George Fleming, and Mr. Victor Horsley (Secretary), and they all signed the report, an abstract of which appears in *The Lancet* of July 2d.

The report commences by stating that it was found necessary that some of the members of the committee should, together with Mr. Victor Horsley, the secretary, visit Paris so as to obtain information from M. Pasteur himself, to observe his method of treatment, and investigate a considerable number of cases of persons inoculated by him; and, further, that a careful series of experiments should be made by Mr. Horsley on the effects of such inoculation on the lower animals. Mr. Horsley's experiments are stated to confirm entirely M. Pasteur's discovery of a method by which animals may be protected from the infection of rabies. If a dog, rabbit, or other animal be bitten by a rabid dog and die of rabies, a substance can be obtained from its spinal cord which, being inoculated into a healthy dog or other animal, will produce rabies similar to that which would have followed directly from the bite of a rabid animal, or differing only in that the period of incubation between the inoculation and the appearance of the characteristic symptoms of rabies may be altered. The rabies thus transmitted by inoculation may, by similar inoculations, be transmitted through a succession of rabbits with marked increase of intensity. But the virus in the spinal cord of rabbits that have died of inoculated rabies may be gradually attenuated by drying the cords, so that after a certain number of days' drying it may be injected into healthy rabbits or other animals without any danger of producing rabies; and by using on each successive day the virus dried during a period shorter than that used on the previous day an animal may be made almost certainly secure against rabies, whether from a bite or from any method of subcutaneous inoculation; and this protection is proved by the fact that if animals so protected and others not thus protected be bitten by the same rabid animal, none of the first set will die of rabies, and, with rare exceptions, all of the second set will succumb.

It may hence be deemed certain that M. Pasteur has discovered a method of protection from rabies comparable with that which vaccination affords against infection from smallpox. It would be difficult to over-estimate the importance of the discovery, whether for its practical utility or for its application in general pathology. It shows a new method of inoculation, or, as M. Pasteur sometimes calls it, of vaccination, the like of which it may become possible to employ for protection of both men and domestic animals against others of the most intense kinds of virus. The duration of the immunity conferred by inoculation is not yet determined; but during the two years that have passed since it was first proved there have been no indications of its being limited. The preventive treatment adopted by M. Pasteur is based on the foregoing experience; but the determination of the success of the method is far from easy, owing to (1) the difficulty of determining whether the bites were really those of rabid animals; (2) the probability of hydrophobia in persons bitten by dogs that were certainly rabid depending very much on the number and character of the bites, whether they were on exposed parts or parts protected by clothing; and in all cases in the amount of bleeding; (3) in all cases the probability of infection may be affected by speedy cauterizing or excision of the wounded parts, or by various washings, or other methods of treatment; (4) the unequal danger of bites of different species of animals, and even of different dogs. In some groups of cases the percentage of deaths among persons bitten by dogs believed to have been rabid has been estimated at only 5 per cent., in others at 60 per cent.; and the mortality from the bites of rabid wolves has been variously estimated at from 35 to 90 per cent.

By the courtesy of M. Pasteur the committee were enabled to investigate personally ninety cases treated by him, these being mostly those which had been earliest treated, in which the periods since inoculation were longest, and living within reach in Paris, Lyons, and St. Etienne. Among the ninety cases there were twenty-four in which the patients were bitten on naked parts by undoubtedly rabid dogs, and the wounds were not cauterized or treated in any way likely to have prevented the action of the virus; there were thirty-one in which there was no clear evidence that the dog was rabid; others in which the bite had been inflicted through clothes. It is estimated, from experience of the results of bites in other cases, that had they not been inoculated, not less than eight among these ninety persons would have died. Not one of them has shown since the inoculation any signs of hydrophobia.

Since, in order to quiet fears, M. Pasteur has been obliged to inoculate many in whom there was no satisfactory evidence that the bite was that of a rabid animal, it might be unjust to estimate the total value of his treatment in the whole of his cases as being more than the rate of mortality observed in them compared with the lowest rate observed in any large number of cases not inoculated. This lowest rate may be taken at 5 per cent.; and, as between October, 1885, and the end of December, 1886, M. Pasteur inoculated 2682 persons (including 127 from this country), the mortality should have been 130. But at the end of 1886 the number of deaths was 31, including 7 bitten by wolves, in whom the symptoms of hydrophobia appeared while they were under treatment; in fact, the actual percentage mortality was between 1 and 1.2, showing, on the lowest estimate, the saving of not less than 100 lives. Of 233 persons bitten by animals in which rabies was proved, only 4 died. Without inoculation at least 40 would have died. Among 186 bitten on the head or face by animals in which rabies was proved, only 9 died, instead of at least 40. Of 48 bitten by rabid wolves, only 9 died, instead of nearly 30. Between the end of last December and the end of March M. Pasteur inoculated 509 persons bitten by animals proved to have been rabid; only 2 have died, one of these, bitten by a wolf a month before inoculation, dying after only three days'

treatment. The committee think it therefore certain that the inoculations practised by M. Pasteur have prevented the occurrence of hydrophobia in a large proportion of those who, if they had not been so inoculated, would have died of that disease. And his discovery shows that it may become possible to arrest by inoculation even after infection, other diseases besides hydrophobia. His researches have also added very largely to the knowledge of the pathology of hydrophobia, and supplied a sure means of determining whether an animal which has died under suspicion of rabies was really affected with that disease or not.

The question whether the method itself entails risk to health or life is then discussed, the distinction between the ordinary method and the "intensive" method being pointed out. By the first method there is no evidence or probability of any danger to health at all; but after the intensive method, which is practised in only the most urgent cases, deaths have occurred which might possibly be attributed to the inoculations rather than to the original infection. Yet in the worst cases the intensive method is relatively more efficacious than the ordinary method, nor is the rate of mortality greater after the former method than after the latter. Certain cases, one of which is detailed, have, however, excited suspicion from the mode of death. The case related is that of a man bitten by a rabid cat at the Brown Institution, treated by M. Pasteur the next day by the intensive method, continued during twenty-four days, and dying about a month later with symptoms of acute ascending paralysis. The man was very intemperate, and had been exposed to chill while crossing the Channel on his return home. Mr. Horsley proved that his death was due to the virus of rabies, by using a portion of his spinal cord for the inoculation of rabbits and dogs, which died with characteristic signs of paralytic rabies such as usually occurs in rabbits. Yet it is by no means certain that the fatal issue in this and in other cases treated by the intensive method was not due to the original infection. M. Pasteur has, however, greatly modified this plan of treatment, which he employs in none but the most urgent cases.

The final paragraphs of the report, which embody practical suggestions, may be given *in extenso:*

The consideration of the whole subject has naturally raised the question whether rabies and hydrophobia can be prevented in this country. If the protection by inoculation should prove permanent, the disease might be suppressed by thus inoculating all dogs; but it is not probable that such inoculation would be voluntarily adopted by all owners of dogs, or could be enforced on them. Police regulations would suffice if they could be rigidly enforced. But to make them effective it would be necessary (1) that they should order the destruction, under certain conditions, of all dogs having no owners and wandering in either town or country; (2) that the keeping of useless dogs should be discouraged by taxation or other means; (3) that the bringing of dogs from countries in which rabies is prevalent should be forbidden or subject to quarantine; (4) that in districts or countries in which rabies is prevalent the use of muzzles should be compulsory, and dogs out of doors, if not muzzled or led, should be taken by the police as "suspected." An exception might be made for sheep dogs and others while actually engaged in the purposes for which they are kept. There are examples sufficient to prove that by these or similar regulations rabies, and consequently hydrophobia, would be in this country "stamped out," or reduced to an amount very far less than has hitherto been known. If it be not thus reduced, it may be deemed certain that a large number of persons will, every year, require treatment by the method of M. Pasteur. The average annual number of deaths from hydrophobia during the ten years ending 1885 was, in all England, 43; in London alone, 8.5. If as in the estimates used for judging the utility of that method of treatment, these numbers are taken as representing only 5 per cent. of persons bitten, the preventive treatment will be required for 860 persons in all England; for 170 in London alone. For it will not be possible to say which among the whole number bitten are not in danger of hydrophobia, and the methods of prevention by cautery, excision, or other treatment, cannot be depended upon.

THE AMERICAN OTOLOGICAL SOCIETY will hold its twentieth annual meeting at the Pequod House, New London, on the 19th of July. The following papers are announced on the preliminary programme:

1. The Examination of the Power of Hearing, and how to Record its Results. Committee report by Dr. H. Knapp (Chairman), Drs. F. S. Prout and D. B. St. John Roosa.

2. The Successful Removal of an Exostosis from the Auditory Meatus by a New Method. By Dr. C. H. Burnett.

3. Cases Illustrating the Differential Diagnosis between Affections of the Middle Ear and those of the Labyrinth. By Dr. D. B. St. John Roosa.

4. Remarks upon a Case of Cerebral Abscess. By Dr. D. B. St. John Roosa.

5. Suppuration of the Tympanum, occurring in a Patient with Bright's Disease, with Presentation of the Pathological Specimen. By Dr. D. B. St. John Roosa.

6. A Case of Syphilitic Disease of the Labyrinth, exhibiting Remarkable Variations in the Degree of Deafness. By Dr. Samuel Theobald.

7. Desquamative Inflammation of the Middle Ear, with remarks. By Dr. O. D. Pomeroy.

8. Photographic Illustration of the Anatomy of the Human Ear. By Drs. H. L. Morse, and B. Alexander Randall, of Philadelphia.

9. An Efficient Powderblower, with remarks upon the Use of Powders in the Treatment of Diseases of the Ear. By Dr. E. E. Holt.

10. A Case of Rapid and Almost Total Loss of Hearing in a Child, seven years of age; Inherited Syphilis apparently the Cause; Marked Improvement following the Use of the Iodide of Potassium. By Dr. A. H. Buck.

11. An Examination of Fifteen Deaf Mutes, by means of F. A. Maloney's Otophone. By Dr. C. H. Burnett.

12. Excision of the Ossicles of the Drum of the Ear. By Dr. Samuel Sexton.

FOOD ADULTERATION IN NEW YORK.—The New York *World* has undertaken to determine whether the charges as to the adulteration of foods, liquors, and medicines at the present time are with or without foundation in fact.

Edward G. Love, Ph. D., was retained to conduct the

examinations. Purchases were made by men from the *World's* staff and a record kept of the weight and place of purchase. The first report refers to sugar, tea, and coffee, and three hundred different stores in New York city were patronized.

The result is gratifying. The number of instances where adulteration had been practised were comparatively few, and the instances of light weight very rare, and quite equalled by the overweights, showing that both might be the result of carelessness.

A review of the 300 reports discloses that of the samples of tea, 88 were not adulterated and 12 were adulterated mostly with "lie tea" and foreign leaves; that of the samples of ground coffee 72 were unadulterated and 28 were adulterated mostly with chicory and peas; that of the sugar samples 98 were pure and only 2 adulterated with starch glucose. In all, there were, of the 300 samples, 258 good and 42 more or less bad. As to the weights of the samples those of 270 were correct and 30 were light.—*Sanitary News*, June 11, 1887.

DR. S. D. POWELL.—Dr. Seneca D. Powell has been elected Professor of Clinical Surgery in the New York Post-graduate Medical School and Hospital.

APPOINTMENTS AT UNIVERSITY COLLEGE, LONDON.—Dr. Sydney Ringer has been elected to fill the Professorship of Clinical Medicine made vacant by the death of Wilson Fox. Mr. Victor Horsley succeeds Dr. Bastian as Professor of Pathology.

THE INTERNATIONAL CONGRESS ON ALCOHOLISM.—At Antwerp, which, in 1885, was the scene of the last Congress on this great question of public health, it was arranged that the next should be held this year at Zurich, on September 9th and 10th. The permanent committee are organizing for the occasion an exposition of everything bearing on alcoholism. For example: tables and diagrams of different countries, indicating the consumption of alcohol per head of the population; the proportion of persons annually undergoing imprisonment per one hundred thousand of the inhabitants; the annual proportion of suicides and of lunatics; the annual outlay on alcoholic drinks compared with that incurred for articles of prime necessity; plans of asylums for inebriates; specimens of non-intoxicating beverages; and comparative regulations of the various temperance societies, with statistics of their working.—*Lancet*, June 11, 1887.

POISONING BY ORNAMENTAL BISCUITS IN MELBOURNE.—Several children have suffered from all the symptoms of irritant poisoning lately, after eating ornamental biscuits. These were found, on analysis, to contain arsenic and copper in the coloring matter, and the manufacturers, at the instance of the Central Board of Health, were fined £20 and costs.—*Lancet*, June 11, 1887.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U. S. ARMY, FROM JULY 5 TO JULY 11, 1887.

HEGER, A., *Lieutenant-Colonel and Surgeon.*—Ordered to Fort Columbus, New York Harbor, N. Y.—*S. O. 156, A. G. O.*, July 8, 1887.

JANEWAY, J. H., *Major and Surgeon.*—Ordered to Benicia Barracks, as Post Surgeon; also, as Attending Surgeon at Benicia Arsenal, Cal.—*S. O. 156, A. G. O.*, July 8, 1887.

BIRMINGHAM, H. P., *Captain and Assistant Surgeon.*—Ordered to Fort Myer, Va.—*S. O. 156, A. G. O.*, July 8, 1887.

WOODRUFF, C. E., *First Lieutenant and Assistant Surgeon.*—Ordered to Fort Mackinaw, Mich.—*S. O. 156, A. G. O.*, July 8, 1887.

WINNE, C. K., *Captain and Assistant Surgeon.*—Ordered to Fort Wadsworth, New York Harbor, N. Y.—*S. O. 156, A. G. O.*, July 8, 1887.

HOWARD, VALERY, *Captain and Assistant Surgeon.*—Ordered to Fort Abraham Lincoln, Dakota Territory.—*S. O. 156, A. G. O.*, July 8, 1887.

MAUS, L. M., *Captain and Assistant Surgeon.*—Ordered to Fort Schuyler, New York Harbor, N. Y.—*S. O. 156, A. G. O.*, July 8, 1887.

GIRARD, J. B., *Captain and Assistant Surgeon.*—Ordered to Fort Lowell, Arizona.—*S. O. 156, A. G. O.*, July 8, 1887.

POINDEXTER, J. D., *First Lieutenant and Assistant Surgeon.*—Ordered to Camp Poplar River, Montana Territory.—*S. O. 156, A. G. O.*, July 8, 1887.

MACAULEY, C. N. B., *First Lieutenant and Assistant Surgeon.*—Ordered to Fort Gibson, Indian Territory.—*S. O. 156, A. G. O.*, July 8, 1887.

BYRNE, C. B., *Captain and Assistant Surgeon.*—Ordered to Washington Barracks, District of Columbia.—*S. O. 156, A. G. O.*, July 8, 1887.

WILCOX, T. E., *Captain and Assistant Surgeon.*—Ordered to Fort Niobrara, Nebraska.—*S. O. 156, A. G. O.*, July 8, 1887.

LIPPINCOTT, H. *Major and Surgeon.*—Ordered to Fort Union, New Mexico.—*S. O. 156, A. G. O.*, July 8, 1887.

CLEARY, P. J. A., *Major and Surgeon.*—Ordered to Fort D. A. Russell, Wyoming.—*S. O. 156, A. G. O.*, July 8, 1887.

CALDWELL, D. G., *Major and Surgeon.*—Ordered to Fort Assinniboine, Montana Territory.—*S. O. 156, A. G. O.*, July 8, 1887.

TORNEY, G. H. *Captain and Assistant Surgeon.*—Ordered to Fort Robinson, Nebraska.—*S. O. 156, A. G. O.*, July 8, 1887.

REED, WALTER, *Captain and Assistant Surgeon.*—Ordered to Mount Vernon Barracks, Alabama.—*S. O. 156, A. G. O.*, July 8, 1887.

PATYKI, J. H., *Captain and Assistant Surgeon.*—Ordered to Fort Huachuca, Arizona Territory.—*S. O. 156, A. G. O.*, July 8, 1887.

EBERT, R. G., *Captain and Assistant Surgeon.*—Ordered to Fort Custer, Montana Territory.—*S. O. 156, A. G. O.*, July 8, 1887.

PELCHER, J. E., *First Lieutenant and Assistant Surgeon.*—Ordered to Fort Monroe, Virginia.—*S. O. 156, A. G. O.*, July 8, 1887.

GARDINER, J. DE B. W., *Captain and Assistant Surgeon.*—Ordered to Fort Washakie, Wyoming Territory.—*S. O. 156, A. G. O.*, July 8, 1887.

CHAPIN, A. R., *First Lieutenant and Assistant Surgeon.*—Ordered to Newport Barracks, Kentucky.—*S. O. 156, A. G. O.*, July 8, 1887.

FORWOOD, W. H., *Major and Surgeon.*—Ordered to Fort Snelling, Minnesota.—*S. O. 156, A. G. O.*, July 8, 1887.

PERLEY, H. O., *Captain and Assistant Surgeon.*—Ordered to Fort Wayne, Michigan.—*S. O 156, A. G. O.*, July 8, 1887.

TREMAINE, *Major and Surgeon.*—Ordered for examination by Army Retiring Board, at Governor's Island, New York Harbor, N. Y.—*S. O. 151, A. G. O*, July 1, 1887.

SKINNER, J. O., *Captain and Assistant Surgeon.*—Granted leave of absence for four months, on surgeon's certificate of disability.—*S. O. 151, A. G. O.* July 1, 1887.

HARRIS, H. S. T., *First Lieutenant and Assistant Surgeon.*—Will be relieved from duty at Fort Ringgold, Texas, upon the return of Assistant Surgeon W F. Carter, and will then report to commanding officer at Fort McIntosh, Texas, for duty.—*S. O. 73, Department of Texas*, June 27, 1887.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JULY 9, 1887.

HUDSON, A., *Medical Inspector.*—Detached from the "Trenton," and wait orders.

SCOFIELD, W. K., *Medical Inspector.*—Ordered to relieve Medical Inspector Hudson, on the "Trenton."